

**COURAGE UNDER FIRE:  
EXAMINING GOVERNMENT PREPAREDNESS  
AND RESPONSE TO WILDFIRES IN  
CALIFORNIA**

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**HEARING**

BEFORE THE  
SUBCOMMITTEE ON ENVIRONMENT  
OF THE  
COMMITTEE ON OVERSIGHT  
AND REFORM  
HOUSE OF REPRESENTATIVES  
ONE HUNDRED SIXTEENTH CONGRESS

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**COURAGE UNDER FIRE:  
EXAMINING GOVERNMENT PREPAREDNESS  
AND RESPONSE TO WILDFIRES IN  
CALIFORNIA**

**Tuesday, August 20, 2019**

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON ENVIRONMENT,  
COMMITTEE ON OVERSIGHT AND REFORM,  
*Washington, D.C.*

The subcommittee met, pursuant to notice, at 10 a.m., in Council Chambers, Simi Valley City Hall, Simi Valley, CA, Hon. Harley Rouda (chairman of the subcommittee) presiding.

Present: Representatives Rouda, Hill, Brownley, and Torres.

Ms. HILL. Okay. Well as I said, thank you so much for being here. I am Congresswoman Katie Hill. We are in my district right now. I want to give a couple of thank yous really quick. I want to thank the Chairman Harley Rouda who is my colleague for agreeing to hold this hearing on such an important issue to our community. I want to thank the witnesses for agreeing to appear. I want to thank my colleague Norma Torres, Congresswoman Torres.

We are also going to be joined later by Congresswoman Julia Brownley who is our neighbor, and I want to thank the committee staff, my own staff, and Simi Valley, the city of Simi Valley for allowing us to use this space, and Simi Valley Police Department for always providing us such wonderful security.

Really quickly, I would also like to have a moment of silence for our fallen Officer, Officer Moye, in Riverside whose funeral is today. So, if you will join me in a brief moment of silence. Thank you. Our thoughts are with Officer Moye's family during this difficult time. Thank you again for being here. And with that, I will turn it over to the chairman.

Mr. ROUDA. Thank you. The subcommittee will come to order, and first I would like to thank my fellow members here, Congresswoman Brownley for joining us, Congresswoman Hill for hosting us in your district, and Congresswoman Torres for joining us as well, and our witnesses, and all of you here today on such an important topic, not just for California, but for our entire country. Without objection, the chair is authorized to declare a recess of the committee at any time. This subcommittee has come here today to examine the Government preparedness and response to the wildfires in California.

I now recognize myself for five minutes to give an opening statement. This is the second hearing this Congress that the Environmental subcommittee has held in my home state of California.

Again, I would like to send my special thanks to my colleague, Representative Katie Hill for working with my staff to organize this hearing here, in her home district, on what is arguably one of the most important issues facing California today, managing and responding to destructive wildfires that over the past two seasons have caused the death of more than 100 people, destroyed thousands of homes, exposed millions of urban and rural California's to unhealthy air.

These wildfires are an emergency and I want to assure everyone that we in Congress are addressing them as such. At times like these D.C. can seem like a far place from California, both physically and metaphorically. We in Congress know that Californians might look at us and say, you elected officials do not really get what we have lived through, what we have to suffer, but we do, and we are holding this hearing today in Simi Valley because we know that we need to be home to hear about the scope of this problem directly from the source.

My colleague who represents this district, Representative Hill, was forced to flee her hometown during the Stone Fire of 2018. She and her family experienced losses that we would not wish on anyone. So, I want all of you to know, we in Congress see you, we hear you, and we are here for you. These are our homes, our communities, our friends, our neighbors, and our beautiful State that is being destroyed. And so, we are here today, holding this hearing, with three goals in mind.

First, we will examine the status of the recovery from the two deadliest wildfires in the state's history in 2017 and 2018, as well as challenges we are facing going into the peak of the 2019 wildfire season. We will ask how the Federal, state and local Governments could be working more effectively, both together and on their own, to ensure that basic needs of wildlife recovery are met, that debris are removed quickly and efficiently, that there is sufficient affordable housing for people who have been displaced, and that all people who are in need of public assistance can access it.

It is our new reality that wildfires are occurring in more urban areas and wildfires are becoming more intense and more frequent due to climate change. So, in the future, FEMA is going to be playing a much bigger role with wildlife response and recovery than they have in the past, and fire management will have to expand outside the usual purview of the state Government, the Forest Service, and the Department of the Interior.

We in Congress want to help FEMA in taking on this new and challenging role, and we want this hearing to serve as an essential step to do just that. We also want to hear about wildfire mitigation strategies that are being implemented on the state, as well as the Federal Government levels, and areas where we can improve at all levels of Government to better prepare for these devastating wildfires.

The second goal of this hearing is to underscore the enormous public health consequences of wildfires, especially when fires ravage densely populated areas. Burning vegetation releases particulate matter into the air that causes inflammation and irritation of the lungs, decreasing lung and heart functionality over time, in addition to exasperating symptoms of asthma and emphysema. And

if that is not bad enough, the 2018 Paradise Wildfire revealed another major public health threat, the release and spread of toxic chemicals.

When wildfires ravage urban communities which in the past were very rare, chemicals such as lead and asbestos that are contained in pipes, building materials, refrigerators, and other household necessities get released into our air, our soil, and our water. Finally, this hearing will demonstrate that if we in the Federal Government do not take action on climate change, we are digging our own graves fire by fire, hurricane by hurricane, heatwave by heatwave. The statistics from last year's wildfires alone should make our heads spin.

Total economic losses to the state of California were estimated to run at least \$400 billion, making the 2018 wildfire season the most expensive natural disaster in the history of the United States. State and Federal authorities say that it will cost at least \$3 billion to clear debris from 19,000 homes and businesses. Over 1.8 million acres of land burned last year, approximately two and a half times the amount of land that burned the previous year in 2017. But to be honest though, as horrifying as these numbers are, they do not come close to getting at the true devastation wrought by forest fires.

Fires do not just damage homes that can later be repaired, they destroy homes and lives. They reduce families' entire histories to piles of toxic rubble. My home, like every American, is fundamentally a part of who I am. Everything we keep in our home tells our stories, the old photo album, the high school yearbook, our children's old artwork. These are stories that we cannot bear to part with, family heirlooms that have been passed down through generations, it is all there in our homes. And if we were to lose it, we lose a core part of ourselves.

I cannot imagine the pain of watching the life you have built go up in flames right before your eyes. And yet, we in Congress have not done enough to mitigate these fires for the future because we are wasting our time arguing over whether climate change is even real. There is no other word for it but shameful. Let me end by quoting from the state of California's Fourth National Climate Change Assessment, by 2100, if greenhouse gas emissions continue to rise, one study found that the frequency of extreme wildfires burning over approximately 25,000 acres would increase by nearly 50 percent, and that the average area burned statewide would increase by 77 percent by the end of this century.

People in California have seen the extraordinary damage wildfires have done just in the past two years. Do we want our children and grandchildren to continue to suffer and have worse conditions than us? Every single person in this room wants the same thing, for our children to have better lives than we do, but little by little with, every day that we do not act, we are chipping away at their future, their homes, their air, their water, their hearts, their lungs, their livelihoods. We must fight together to make sure this does not happen on our watch.

Thank you, and I now invite my colleague on the subcommittee and Vice-Chair for the full committee on oversight, Ms. Hill, to give a five-minute opening statement.

Ms. HILL. Thank you so much, Mr. Chairman. And again, thank you all for being here. This is a great honor to have a hearing like this in our district. So many of you in the audience have felt the impacts of these all-too-common wildfires.

Less than a year ago, the Woolsey Fire became the most destructive in L.A. County history, which started right here in our own backyard, and the seventh most destructive in state history. You have been evacuated from your homes, you have watched houses and other structures burn, you have felt the anxiety of not knowing what you will come home to. Well, many people across the country on TV and social media have watched as these fires continue to burn, affecting the same neighborhoods and communities year after year. We have experienced them firsthand.

As the chairman mentioned, my family and I have been personally impacted by these fires as so many others in this community have. I had to evacuate my home last summer. We had to trailer my horse, relocate my other animals to my sister's house, only for my sister to also be evacuated later. And I cannot emphasize enough that this was not the first time. Every single member of my family at some point or another living in Santa Clarita has been evacuated over the years. And it has become a common occurrence for people in areas like ours. And I know so many constituents here in Simi Valley and throughout the district and state who have endured evacuations just like I have.

Some have unfortunately returned to their homes that have been completely damaged or destroyed. Our communities face constant uncertainty and we fear for our homes, families, and sometimes for our lives. Wildfires have always been a part of life in California. However, because fire-prone areas are vastly more populated than they were decades ago and fire season is longer and more severe, the risks that we face are more potent today than ever before. I cannot express how grateful I am for the tireless work of our dedicated and courageous firefighters and first responders. With the hot and dry conditions and heavy winds that they encounter, containing and extinguishing these fires is often a Herculean task.

We must all do our part to prevent these out-of-control wildfires from burning throughout our neighborhoods and work together to mitigate the damage when they do. This includes our local county, state, and Federal agencies. We need to talk about the root causes of these wildfires and their impacts on our communities and acknowledge that climate change has been a major driver of the destruction that has wrought throughout our state. Over the last century, Southern California has grown about three degrees warmer.

It is not a coincidence that we have also been experiencing larger and more frequent wildfires over the past few decades, higher temperatures and droughts, dry-out vegetation, making our landscape a virtual tinderbox. We are also seeing more winter rain in fire-prone areas. This leads to more growth, which can be dried out during our hot summers and in some areas can become ultimately fuel for more fires. Wildland fires, including large fires, are a natural part of ecosystems in California, and many native plants and animals depend on habitat created by fires.

That being said, we must also address the fact that many wildfires do occur naturally—do not occur naturally but are instead



the result of human inaction or action itself. Some are caused by a person's negligence or thoughtlessness, such as the campfire left to burn, or a lit cigarette discarded in the middle of dry brush. Equipment belonging to California utility companies has been responsible for igniting some of the most catastrophic wildfires with the most severe impacts to communities in state history.

Consumers should not bear the heavy burden of paying for damage that these companies are responsible for. We need to find an equitable and effective solution for the role that the utility companies play in causing wildfires and for the hefty price of cleanup and repair after these fires have burned throughout our communities. Last month, I am proud to have introduced an amendment on the House floor to address our new wildfire reality. The amendment increases funding for wildfire preparedness, suppression, and emergency rehabilitation, bringing funding for these critical issues to a total of \$5.2 billion.

This is one step in the right direction, but we must continue to work at finding evidence-based effective solutions that will help keep communities in California and across the country safe, and that includes a partnership with our state colleagues. I am very proud to be working with Assembly Member Smith and Senator Stern. We have a letter that has been entered into the record from our colleague and Representative of this area, Senator Stern, talking about the investments that the state has been putting into addressing wildfires, including \$226 million toward forest health and wildfire prevention efforts, and another \$257 million to bolster fire-fighting resources and technology.

So, I am proud to be working with our state and local representatives as we try to figure out long-term solutions and the Federal Government's role in addressing this crisis. We cannot be complacent as wildfires continue to devastate our communities. It would be irresponsible to pretend that fire seasons today are no different from fire seasons of the past.

Yes, this our new normal, but we can and must do better to protect communities from wildland fires, and that is where the focus of our resources and attention should be. For my community, for California, and for states across the country experiencing the devastating effects of wildfires, we need to work together.

Thank you and I yield back.

Mr. ROUDA. Thank you, Congresswoman Hill. Now I want to welcome our first panel of witnesses. Robert Fenton, Region IX Administrator, Federal Emergency Management Agency. Randy Moore, Regional Forester, Pacific Southwest Region, USDA Forest Service. Mark Ghilarducci with the California Governor's Office of Emergency Services. And Mark, I want to thank you as well. You came to Washington and also participated in our hearing on this topic there as well, with some very poignant comments and observations on how important and challenging communications are during—when—we are trying to fight fires in the wild. And [I] hope to hear more about that as well today.

And then Dan Johnson, Southern Region Chief, California Department of Forestry and Fire Protection. If the witnesses would please stand. Do you swear or affirm that the testimony you are

about to give is the truth, the whole truth, and nothing but the truth so help you God?

[Witnesses sworn.]

Mr. ROUDA. Let the record show that the witnesses answered in the affirmative. Please be seated. The microphones are sensitive so please speak directly into them. Without objection, your written statement will be made a part of the record. With that, Mr. Fenton, you are now recognized to give your oral presentation of your testimony.

**STATEMENT OF ROBERT FENTON, REGION IX ADMINISTRATOR, FEDERAL EMERGENCY MANAGEMENT AGENCY**

Mr. FENTON. Good morning, Chairman Rouda, Representatives Hill, Brownley, and Torres. My name is Robert Fenton. I am the Regional Administrator of the FEMA Region IX office located in Oakland. It is my pleasure to be here today to discuss FEMA's preparedness and response to the wildfires in California.

As you know, California has a long history of wildfires. The years between 2012 and '15 were the driest period on record in California. By contrast, the following winter of 2016 was one of the wettest periods in California's history, but it did not change the overall dry conditions in the forests and watersheds. In 2017, more than 9,000 fires burned approximately 1.2 million acres of land, well ahead of the five-year average. That means more than one percent of California's land burned in 2017.

Last year, California saw its most destructive fire season. More than 1.6 million acres of land were destroyed by wildfires. The Camp Fire in Butte County alone destroyed more than 18,000 structures and burned more than 153,000 acres. The fire destroyed more structures than the previous seven worst fires in California combined. Tragically, it was also the deadliest fire season.

While 2018 has ended, the impacts of that unprecedented fire season will continue for years to come. So how can we prevent this type of disaster from happening in the future? The wildfire season has reinforced what we know. Building more resilient communities reduces risks to people, property, public budgets, and the economy. I cannot overstate the importance of focusing on investing in mitigation before disaster strikes. Developing capacity before an incident occurs reduces the loss of life and economic disruption. When communities are impacted, FEMA wants to see rebuilding that is smarter, safer, and stronger. However, there are significant challenges that property owners and communities face in pursuing resilience.

For that reason, FEMA's Acting Administrator Pete Gaynor is calling for a change in the life cycle of opportunity to move mitigation investment to the front of the disaster cycle, not at the end where it typically lies. FEMA is working with Federal, state, local, tribal, territorial, and private sector partners to help align pre- and post-mitigation investments to more effectively reduce losses and increase resilience.

FEMA manages the Hazard Mitigation Grant program, the Flood Mitigation Assistance Grant Program, and the Disaster Mitigation Grant program that funds projects such as seismic retrofits, defensible space, safe rooms, risk reduction for utilities, and other infra-

structure. These funds play a key role in building resilient communities by reducing the risk of future disaster losses. These programs also fund other effective wildfire mitigation projects such as ignition resistant construction and hazardous fuel levels reduction efforts. Mitigation is vital to California.

The National Institute of Building Science's Multi-Hazard Mitigation Council has shown that mitigation programs have saved the American public an estimated \$15.5 billion by building new construction beyond code requirements, \$158 billion in savings from Federally funded mitigation grant programs from 1993 through 2016. From the preparedness perspective, FEMA continues to maintain and strengthen the national preparedness system by helping our non-Federal partners build their capabilities, which will reduce their resilience on the Federal Government in the future.

Together, we are working to achieve the national preparedness goal of a secure and resilient Nation with the capabilities required across the whole community to prevent against, mitigate, respond to, recover from the threats of a hazard that pose the greatest risk. For example, FEMA is focused on promoting integrated mutual aid across the whole community. We are fortunate to live in a state that has a strong mutual aid program. In fact, many other states can learn from California's advanced and time-tested system of statewide mutual aid.

Additionally, FEMA and the U.S. Fire Administration, in partnership with the U.S. Department of Homeland Security's Science and Technology Directorate has convened several learning and sharing sessions, two of which occurred in California, to ensure fire operational leaders are familiar with the latest technologies and methodologies for fighting wildfires, and to identify gaps where existing technologies would aid in reducing the devastating effects of wildfires to people, homes, businesses, and infrastructure located in fire-prone areas.

By far, the 2018 wildfire season was one of the busiest in California and FEMA. I would like to acknowledge that FEMA did not do this alone. Wildfires pose many challenges at all levels of Government. The state of California has done an extraordinary job of building their emergency management capabilities and coordinating local and state level response and recovery efforts. Their leadership and heroism continue to be instrumental in helping FEMA help survivors.

Developing resilient communities ahead of an incident can reduce the loss of life and economic disruption. When communities are impacted, they should ensure that they rebuild infrastructure better, together, and stronger. While we will never be able to eliminate risk, we must mitigate risk to every extent possible. Going forward, there are a few more opportunities to work together with our partners to identify solutions.

This concludes my opening statement. I look forward to answering your question, sir.

Mr. ROUDA. Thank you, Mr. Fenton. Mr. Moore?

**STATEMENT OF RANDY MOORE, REGIONAL FORESTER, PACIFIC SOUTHWEST REGION, U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE**

Mr. MOORE. Good morning. Mr. Chairman, Congresswoman Brownley, Congresswoman Hill, and Congresswoman Torres. Thank you for inviting me here today to give testimony to this field hearing. My name is Randy Moore. I serve as the Regional Forester of Pacific Southwest Region of the USDA Forest Service, and I am happy to talk about the important work that we are doing with our partners to prepare for and mitigate the risks of wildfires here in California. In 2017 and 2018, California experienced the deadliest, most destructive wildfires in history.

More than 17,000 wildfires burned almost three percent of California's landmass. These fires tragically killed 146 people, tens of thousands of homes and businesses, and destroyed billions of dollars in property. In all national forests impacted by these fires, we are conducting salvage operations, we are beginning reforestation efforts, and we are further reducing hazardous fuels in our national forests.

In 2019, fire year in California began with an extremely wet winter and extend it into May of this year. This much-needed precipitation replenishes reservoirs and delayed the start of fire season at higher elevation forested lands. As a comparison over, 4,700 fires have burned over 4,462 acres across all jurisdictions in California to date. This time last year, we had 8,000 fires and burned nearly 940,000 acres.

While we are seeing a slow start to the 2019 fire year, the large potential room is still trending above normal as the grass is dried out, the lower elevations and productivity is expected to increase over the next few months. Currently, more than 25 million acres of California's wildlands are classified as a very high or extreme fire threat. There are approximately 11 million people living in this high-risk area. We all know that actively managing these fire-dependent landscapes and implementing fuel reduction projects can reduce the frequency and the impact of severe wildfire events.

In light of the new normal of longer fire seasons and larger, hotter more destructive wildfires, we recognize that we need to look at wildfires and hazardous fuel reduction differently. Last year USDA launched its Shared Stewardship Approach to Management that brings states and stakeholders together to prioritize cross-boundary investments to improve forest conditions. The lead agencies in California, Forest Service and California Natural Resources Agency, will be signing the Shared Stewardship agreement.

Together we plan to achieve our mutual goals of treating 1 million acres in California's forest rangelands. Two weeks ago, over 80 Federal, state, and local governments, private landowners, and nonprofit organizations to begin mapping forest conditions across the state. We will use this map to focus and prioritize our hazardous fuel reduction project together so that we are treating the largest scraps of land at one time, making the treatments more effective, and of course, more healthy and fire resilient.

I want to thank Congress for making the Shared Stewardship approach possible with the increased capacity to provide the regional legislation, including a 2018 omnibus bill and farm bill. The

Forest Service is also promoting fire-adapted communities by collaborating with other Federal and non-Federal Government entities. For example, the Forest Service assists state foresters and local communities to build capacity for prevention, mitigation, and suppression of wildfires on Federal lands and non-Federal lands. Training provided through the program provides for effective and safe initial response to wildfires.

This year in California, we will assist over 500 communities through a statewide outreach and educational program. The Forest Service also supports local fire preparedness and suppression efforts and provide funding for equipment, training, and expansion of volunteer fire departments where little or no fire protection is available. This year, the agency will support 141 local fire departments in California serving 695 communities.

Last, the Forest Service partners with the California Fire Safe Council to protect home and communities from wildfires. Over the past several years, over 500 communities have been assisted through Forest Service grants, and funds, and outreach, and education projects, community risks, hazardous fuels, and community mitigation projects. Working together across landscapes, we can create healthy forests that will stand the pressures of increasing temperatures, prolonged droughts, and longer and hotter fire seasons. Using the tools provided by Congress and innovative solutions to share stewardship with partners, the Forest Service is making great progress and plans to improve forest conditions continually.

This concludes my remarks, Mr. Chairman. I would be happy to answer any questions you have.

Mr. ROUDA. Thank you, Mr. Moore. Mr. Ghilarducci?

**STATEMENT OF MARK GHILARDUCCI, DIRECTOR, CALIFORNIA GOVERNOR'S OFFICE OF EMERGENCY SERVICES**

Mr. GHILARDUCCI. Good morning, Chairman Rouda and Representatives Hill, Brownley, and Torres. My name is Mark Ghilarducci and I am the Director of the California Governor's Office of Emergency Services. First, thank you for inviting me to testify once again on the recovery from the devastating 2017 and 2018 wildfire season, and ongoing emergency preparedness efforts to safeguard California in 2019 and beyond.

California continues to prepare for another wildfire season through the enhancement of firefighting capabilities and aggressive vegetation and fire fuel mitigation efforts in high severity fire zones while continuing to support the recovery efforts of multiple communities impacted by the 2017 and 2018 catastrophic wildfires. Again, climate change continues to act as a force multiplier when it comes to wildfires and their destruction. It is important to note that 10 of the state's 20 most destructive wildfires have occurred just since 2015.

Climate change factors have driven the extensive, erratic, and rapid spread of wildfires, and this trend is expected to continue with the estimated burn area for fires to increase by 77 percent by the year 2100. This year, Governor Newsom and the California legislature acted quickly to create a legislative package to further prepare the state with primary efforts designed to increase situational

awareness to better alert warning capabilities, enhance implementation of next-generation 911, to modernize the state's 911 system, strengthen codes and regulatory oversight, increase preparedness efforts across the state, particularly in vulnerable communities, increase firefighting capabilities with more equipment and personnel, focus utility preparedness and risk mitigation efforts, and to buy down the risk of wildfire by accelerating multiple projects to create defensible space in high severity fire zones.

Assembly Bill 1054 and Senate Bill 111 address the safety, accountability, and stability for residents, businesses, and utilities of California through novel requirements and policies. The legislation includes enhancements to existing regulatory authorities and establishes a Wildfire Safety Advisory Council to advise and make actionable safety recommendations to the California Public Utilities Commission.

These bills also establish new and innovative policies that will increase the responsibility of investor-owned utilities in safeguarding against wildfires. The overall direction to the IOUs was to better protect infrastructure and mitigate the possibility of fire starts. As a result, the IOUs have instituted the Public Safety Power Shutoff Program. This program is implemented by the utilities when conditions indicate a high probability for fire, such as during a red flag warning situation.

Cal OES along with CAL FIRE is working with the IOUs to refine public education, enhance overall preparedness planning efforts, and streamline the notification process to local governments and to the public. In addition, as part of ensuring for the states Fire Mutual Aid response capability, Cal OES, CAL FIRE, the US Forest Service, the USDA along with local governments have jointly come to terms regarding the current interpretation and implementation of the 2019 California Fire Assistance Agreement that provides for reimbursement to state and local fire responders. This agreement is a critical component to reinforce relationships and ensure that the capacity of local and state fire mutual aid assets, that respond to wildfires at the request of the Federal Government, remain in place, and are reimbursed in a timely and efficient manner.

A top priority during both the 1917 and 1918 wildfire recovery efforts remains the facilitation of rapid debris removal operations. Without a successful and rapid debris removal program, communities would be unable to start to rebuild, amplifying public health and safety issues, and stalling both individual and community economic recovery. Private property debris removal on this scale is a new process in California.

Following the 2017 wildfires, California sought the assistance from the United States Army Corps of Engineers through FEMA to clear debris in Sonoma, Napa, Mendocino, and Lake Counties. Since then, Cal OES has moved rapidly to build capabilities within the state and have adopted best practices from the lessons learned in 2017 to better oversee and effectively facilitate state-managed debris removal with efficiency and accountability. Following the 2018 wildfires the next year, Cal OES undertook multiple large-scale debris removal operations in both Los Angeles and Ventura

Counties here in Southern California, and Siskiyou, Shasta, and Butte Counties in Northern California.

Removal of debris from the Hill and Woolsey Fires was completed during the final week of July 2019. A total of 422,229 tons of debris was removed from the burn areas of the Hill and Woolsey Fire. The Camp Fire debris removal program in Butte County, with more than 18,000 storage structures, is now roughly 85 percent complete. Both projects have been efficient and have exceeded metrics and timelines initially set.

In addition, throughout the 1917 and 1918 wildfire recovery efforts, assistance to individuals has been another top priority. Throughout this process, FEMA has been very helpful in providing transitional sheltering assistance and temporary housing solutions for several thousand individuals and families. The Team at FEMA Region IX have consistently been great partners and solution oriented. However, IA programs continue to remain a complicated challenge. Catastrophic events, like the recent wildfires, severely disrupt lives and businesses, and the Federal IA programs are essential for helping individuals and the community begin the recovery process.

Recently, however, FEMA issued new guidelines and declaration factors for obtaining individual assistance designation. While we are still evaluating these new factors, our initial analysis indicates that they may result in a negative impact to California, making it harder to obtain individual assistance and the ability to recover from future disasters. The new factors take into account several new indicators in determining if the event will qualify for IA, including the state's fiscal capacity, the state's total taxable resources, gross domestic product, nonprofit capability, and per capita income of the local area.

States such as California, with large and extremely diverse populations and large taxable baselines, appear to be penalized as there will be an assumption that the state has the fiscal capacity to handle the impacts of the event with its own resources. We believe these changes would now require the state to demonstrate at least twice as much eligible damage before IA support would be granted. Time will tell how these new factors will be interpreted and applied.

In conclusion, I would like to thank you for the opportunity to testify before you on these very important topics, and for your continued support. California is committed to developing and promoting innovative prevention and mitigation initiatives, and wildfire management throughout the state. However, these initiatives, programs, and policies cannot succeed in the vacuum. They will require the whole of community participation and support from every level of Government to reduce the threat of devastating wildfires, protect lives and property, and build a more resilient California.

Thank you.

Mr. ROUDA. Thank you, Director Ghilarducci. Mr. Johnson, five minutes for your opening testimony.

**STATEMENT OF DAN JOHNSON, SOUTHERN REGION CHIEF,  
CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION**

Mr. JOHNSON. Good morning Honorable Chairman Rouda and Representatives Torres, Hill, and Brownley. Thank you for being here this morning. My name is Dan Johnson. I am the Southern Region Chief of the California Department of Forestry and Fire Protection known as CAL FIRE. I began my career at CAL FIRE in 1982 as a volunteer firefighter in our CAL FIRE Riverside unit and have served in a variety of roles in units across Southern California until I was recently appointed to my current position late last year.

As the Southern Region Chief, I am responsible for the Operations Administration of CAL FIRE's nine administrative units and divisions located South of Sacramento, in the Bay Area, stretching to Mexico. I also receive delivery services of five Southern California contract counties to provide direct fire protection to the state's responsibility areas within their jurisdiction on CAL FIRE's behalf.

In opening, I would like to talk a little bit about a recent experience with disasters in California, and what we are doing as CAL FIRE to lean forward and make our natural environment more fire resilient, to make our homes and infrastructure more fire-resistant, and to mitigate the threat of wildland fires.

Our state certainly faces its share of natural disasters, from devastating earthquakes, wildfires, to flooding, drought, and the threat of tsunamis. California is a state where no matter where you live, natural disasters are unavoidable. Until the recent earthquake in Kern County, wildfires have been at the top of everybody's minds. And while wildfires are a natural part of California's landscape and ecology, during the past two years, we have experienced the most destructive fires in our recorded history.

As my partners all state and identified previously, in 2017 over 10,000 structures were destroyed, in 2018 over 22,000 structures were destroyed, and over the last two years, close to 2 million acres were burned across our state, and over 100 people, residents, and first responders, tragically lost their lives in wildfires.

The effects of climate change, fire suppression activities, overgrown forests, and prolonged drought have resulted in unprecedented tree mortality in the state's forests, as well as an increased number of size and severity of our wildfires. Loss of life and structures is a direct or proximate result of wildfires is at an all-time high. But California is resilient.

Beginning last year, California committed to spending \$1 billion dollars over the next five years to improve forest health and reduce fuel loads in our wildlands. In this Fiscal Year alone, Governor Newsom and the Legislature allocated nearly a billion dollars for emergency management and response programs, including money to build an earthquake early warning system and update our nearly 40-year-old 911 system to next-gen 911. At CAL FIRE, we are making strategic investments to respond and to mitigate the impacts of wildland fires in our state. We are working closely with the United States Coast Guard and the United States Air Force to retrofit seven Federal C-130 Hercules Aircraft and the air tankers.



We are replacing our 60's version Vietnam-era UH1H Huey Helicopters with the modern Black Hawk capable of nighttime aerial firefighting in a much larger capacity of water. We are adding 13 additional engines, year-round engines, and 131 positions to our existing fleet of 343 engines to meet the increased demand for wildland fire response and the need for firefighting resources earlier and much later in the calendar year. And we are additionally hiring an additional 394—or excuse me, 393 seasonal firefighters just as of these last two weeks to increase staffing for wildfire suppression, fire lookouts, and enable the additional shift rotations for a cruise during this year's fire season.

With these new resources, CAL FIRE is building its capacity to confront the new reality of larger and more frequent wildfires occurring across the state. In the area of fire prevention, we are working to complete 35 priority field projects, refuel reduction projects that will help reduce wildfire risks to over 200 of California's most vulnerable communities. This work is being done by CAL FIRE's six dedicated fuel reduction crews and five National Guard crews funded by CAL FIRE's partnership with local communities, and we are in the process of standing up for additional crews to bring our overall capacity to 10 year-round fuel reduction. We are getting ready to implement a new round of forest health and fire prevention grants in direct funding projects, totaling approximately \$100 million.

These projects will focus on wildland-urban interface projects and landscaping level forest health and fuel reductions. We also continue to work in partnership with our state—I am sorry, our Federal and local partners on a variety of forest health projects to address such things as forest insect and disease mitigation, research, reforestation, tree thinning, and other actions to restore watershed health and function, and support biodiversity and wildlife adaption to climate change.

And finally, but critically important, our public education program helps inform Californians about the fire risk and fire prevention measures and provides advice on steps families can take to harden their homes, to make them more resilient to wildfire. I would like to close by emphasizing the value CAL FIRE places on our close relationship with our Federal partners.

Every day in our Southern Region Operational Center, Federal and state representatives from the Forest Service, Bureau of Indian Affairs, Bureau of Land Management, National Parks work side-by-side with CAL FIRE and our OES partners in joint missions to protect the people, property, and natural resources in California. Thank you, honorable chair and committee members, for the opportunity to testify today. I will be happy to answer questions.

Thank you.

Mr. ROUDA. Thank you, Mr. Johnson, as well as all of the witnesses. The chair now recognizes Congresswoman Hill for five minutes of questioning.

Ms. HILL. Thank you so much, Mr. Chairman. And thank you to all of our witnesses. Really quickly, I would like to formally request that letters from Assembly Member Smith and Senator Stern be entered into the record without objection.

Mr. ROUDA. So moved.

Ms. HILL. Thank you so much. Today's hearing fits within the subcommittee's ongoing attention to the existential climate crisis. As we have heard from our witnesses, what we are discussing today underscores the dire conditions that we are currently experiencing throughout the country, including right here in Southern California.

The bottom line is that climate change is getting worse every day and is expected to continue to increase the frequency and intensity of wildfires and areas across the country. Unlike previous versions and FEMA's strategic plan for 2018 to 2022, the words climate change and global warming are no longer included. This is notable because FEMA's previous strategic plans emphasize the threats posed by climate change. However, now these documents do not mention climate, global warming, extreme weather, or any other terminology associated with scientific predictions of rising surface temperatures and their effects.

So, my question is to Mr. Fenton. Do you believe that climate change is real and is man-made?

Mr. FENTON. Yes, so I think as far as climate change, you know, my role is to respond to disasters. I am not a scientist and probably cannot argue. The specifics are the same science behind climate change, but I would say that in my last 23 years of doing this, your comments are correct that we have seen disasters become more severe, whether it be typhoons out in the Pacific or fires here and have been more frequent.

And so, we are seeing this evolution continue and really need to focus on, you know, resilience and how to work toward it. So, I very much agree with all specifics, I am just not going to argue climate change as I am not a scientist and probably—

Ms. Hill, I appreciate the diplomatic way you answered that. I admire your skills actually.

Mr. FENTON. Thank you for that question though.

Ms. HILL. So based on scientific data, you do see a correlation between increasing surface temperatures and the frequent destructive wildfires?

Mr. FENTON. And I am also seeing that in the Far West and Pacific. We are seeing more increase of waves, higher tide, rogue waves, now that we have not seen before covering the Micronesian Islands and those kinds of things. So, we are seeing this across my OR, which is about eight time zones and a very big area. So, from the fires to the Far West Pacific.

Ms. HILL. So as a career staffer and as somebody who is, you know, responsible for actually addressing these threats, without acknowledgement of climate change in the strategic planning, which I know happens from an administrative level and is something that you just—it is given to you, how does FEMA Region IX expect to react to this reality of more intense and frequent wildfires due to climate change?

Mr. FENTON. So, I think is a combined effort, just not the Federal Government. The Federal government, state government, local government, private nonprofit, private sector, has to do with this. It starts with building codes. It starts with land use planning. It starts with how we manage the forest, you know. All those things are critical parts of this, and we have to understand that climate

is changing right now so we need to take into account, you know, how we work within these wildland-urban areas, especially, you know, as we have seen a recent years, it is not just in the urban areas, is going into now metropolitan areas and those kinds of things as you see the fires move.

So, we need to collectively work together. I think some of the authorities we were recently given under the DRRRA to go ahead and move mitigation before disasters, start working on some of those issues. So why we—I think California has done a great job in new codes and building structures that are fire-resistant. Upon this are the whole houses that are out there and what they were built out of. So, using mitigation money to replace roofs, make them fire resistance, or other finds to make them more hardened is where we need to go.

But I think it is a collective effort at all levels, and those authorities to make that happen are at all levels of Government. So, we need to work together. I think our goals work toward that and the authority you have given us help us with that.

Ms. HILL. And so, you have been with FEMA for three Administrations, four?

Mr. FENTON. Going back to the Clinton Administration.

Ms. HILL. Okay so four Administrations and I know that probably the strategic plans change every Administration——

[Laughter.]

Mr. FENTON. Sometimes between Administrations.

Ms. HILL. Okay. So, you know, as you are thinking about this and, you know, FEMA is responsible for really being the last line of defense for so many Americans. How, without the acknowledgment of this ongoing and future crisis of climate change, are you concerned about FEMA's assistance capabilities to remove climate change preparedness from the planning processor or do you feel like it is career stuff, you are just continuing on with the work that needs to be done?

Mr. FENTON. Yes, the work, the level of disasters, the amount of work has not changed. You know, I really support our state and local governments. That is all my authorities are to do that. So, the fact that that is their focus, it is my focus, and I continue to work on that.

I just came back from a Pacific partnership meeting and we talked about tidal change out there and everything we could do in doing that in partnering with the universities and academic institutions to further look at that including NOAA and other organizations out there, just like we are partnering with the Cal OES and the different fire agencies here to figure out what we can collectively do better. And it is really a mosaic of programs and authorities between all of us that help or enable us to move the needle and make us more resilient and ready for fires.

Ms. HILL. We appreciate your work and I recognize the impact that the shutdowns have had on Federal agencies, and that the Administrative decisions have, and that you and your staff have been continuing to assist us on an ongoing basis is definitely recognized. And we will fight to continue to make sure that the resources are available to you.

I want to turn now to the Forest Service. The USDA Forest Service website explicitly states that climate change does exist and is a result of man-made greenhouse gases. I am glad to see that this still is the case. Mr. Moore, how is the Forest Service adapting to climate change?

Mr. MOORE. So, excellent question and I have to tag onto Mr. Fenton's response here. Here in California, and I will just talk a little bit about the islands too because I have responsibilities not only in California but in Hawaii and the affiliated Pacific islands, like Guam, Samoa, and the federated states of Micronesia. Here in California, we noticed higher temperatures and higher elevations, and when you look at the wildfires that are occurring throughout the state, they are occurring on higher elevations that we have not experienced in the past.

And I think with five years of drought, 100 years of fire suppression, we have conditions out of landscape now that is helping to contribute to these catastrophic wildfires we are experiencing here today. So, what we have done, which is different than in the past, because in the past, the Forest Service used to sit down together and they would decide what to do, and then our public comment was, what do you think about what we think?

I think that what we are doing here in California is that we are facilitating convenient expertise throughout the greater community to say, why do not we sit down and look at what needs to happen out on these landscapes. And I mentioned earlier that we have about 80 individuals, state, local, and Federal Governments looking to map out our landscapes throughout California, and what we plan to do there is to treat—what we are finding is that when we treat jurisdictional boundaries that are not as effective in making those fires behave as they move across the landscape, and so we have to look at landscape treatments where you actually make a difference on those landscapes, where you have communities.

And so that is our approach now and how we are addressing some of these conditions out on the ground. The disease and insects in the Southern sea air. You know, we have well over 140 million trees that are dead throughout the state. And so that is—five years of drought has also contributed to that. So, we have these wildfires in these areas is unprecedented in terms of how it behaves as it moves across the landscape.

Ms. HILL. Thank you. And do you believe that the refusal to—the change in kind of administrative policy around climate change has affected your ability to combat wildfires resulting from climate change and the planning for the coming years?

Mr. MOORE. Congresswoman, keep in mind that to an employee it does not matter what Administration comes in. We try and respond to whatever policies are in place. And that is where we are now, that whatever policy is in place, we are going to do what we can to make sure that policy is implemented. I find it though that with shared stewardship as an example recently, it has allowed us to move across the landscape and look at larger areas to treat.

Bottom line is that we are trying to stop the fire and its behavior in California, because we live in a fire adept ecosystem, so fires are going to happen. What we want it to do is, like I said earlier, behave as it would naturally.

Ms. HILL. Thank you, the last question really quick for you and then I will yield back to my colleagues and hopefully come back for my questions to Mr. Ghilarducci and then Mr. Johnson. But can you—sorry, I am losing my voice today—but can you just speak briefly, either Mr. Moore or

Mr. Fenton, to the impacts that the shutdown had this Fiscal Year on any of your abilities to address the wildfires?

Mr. MOORE. So normally in January, what we would do is—we do a lot about the hiring of our seasonal work force in January. So, we were not able to do a lot of hiring and that is also when we have the best window to do prescribed burning.

And so, to give you an example, we burned 63,000 acres here in California last year, which is the most we have ever burned since 1991, since the original fire plan. This year we are about halfway there. Most of our windows are disappearing. Although we have had a wet window, a wet spring, and wet winter, it has allowed us to do more than we normally would this time of the year.

So, it may be balanced out in the end but so far, we have not reached that level that we reached last year. And so, it has some impacts on what we have been able to use.

Ms. HILL. And Mr. Fenton, anything on your end?

Mr. FENTON. This is probably been the busiest year I have had in Region IX. So, we were all disasters from one end of our area to another end with maybe a small group of people that work more on resilience that were not in the office, so if anything, diminishes more than resilience, preparedness type of work with communities that did not happen during that period.

Ms. HILL. Thank you very much. I yield back to the chairman.

Mr. ROUDA. Thank you, Congresswoman Hill, and with a little luck, we will be able to get back to some followup questions. And before I move to the next member, just very quickly. Mr. Fenton, how long have you been at this job, this career?

Mr. FENTON. Started in 1996. So, 23 years now.

Mr. ROUDA. Twenty-three years? Mr. Moore?

Mr. MOORE. Forty years.

Mr. ROUDA. Okay. Mr. Ghilarducci?

Mr. GHILARDUCCI. Just about 38.

Mr. ROUDA. Mr. Johnson?

Mr. JOHNSON. 31, sir.

Mr. ROUDA. Well, thanks to all of you for your incredible service and experience because we will certainly need it. The chair now recognizes Congresswoman Torres for five minutes-ish of questioning.

[Laughter.]

Ms. TORRES. Thank you. Thank you so much. So, between the four of you, you have about a 140 and some years of experience on this issue. It is such an opportunity and thank you for hosting this briefing here as we get ready for our fire season that is going to hit us pretty soon within the next month or two. I am speaking from two different perspectives. One, not only as a legislator in my official capacity but No. 2, in 2005 I lost my home and everything that I owned to a fire.

So, speaking from that perspective of being, you know, homeless because you lived in a hotel and temporary shelter for about 14

months until my home was rebuilt, and what that does to a family and a community. On the issue of mutual agreements, that is really, really critically important to me as I look to how we are going to combat these wildfires that now come with their own climate, as has been stated in last year.

We know that prison inmate volunteer crews are dwindling. That resource is getting more and more scarce. So, what are we doing to not only prepare communities, and I am not just talking about fire clearance. So, you know, I am talking about, how are we engaging the broader community at every level to ensure that we are able to either train volunteers who may be interested in doing this type of volunteer work as needed or just members of the general community to help them survive a wildfire. Any of you, please.

Mr. GHILARDUCCI. Well, maybe I will start and just say that, you know, California in the context of mutual agreements and mutual aid—

Ms. TORRES. Can you pull your mic toward you? Thank you.

Mr. GHILARDUCCI. Yes. In the context of mutual aid and mutual agreement, California really has the most robust, most innovative mutual aid system in the world. It is a system that gets utilized every day and it incorporates, you know, all of our fire services but also incorporates private sector and incorporates EMS and law enforcement to be able to apply and respond. But in advance to the fires, they are working on training and they are working on other kinds of community preparedness efforts. You know, we also have a very robust community emergency response team program in California.

In fact, the Governor just this budget season put an additional \$50 million into preparedness related efforts to continue to buildup not just the CERT programs but also work on programs like LISTOS to be able to broaden preparedness activities and awareness, prepare an aware sort of programs for all of our communities knowing full well that as much as we can empower our citizens, they become part of that overall result.

Ms. TORRES. What does that mean though, sir? I live on a hill. Outside of the fire department coming out to my home once a year to inspect and to give notice that we need to do fire clearance, I mean, what does that mean? I do not see real PSA's, you know, in the news. How are we informing the community that they need themselves to be prepared?

Mr. GHILARDUCCI. So, I think one thing I am going to turn over to Chief Johnson because they have a very aggressive public service program on just what you are talking about, but it is important and we work through our local fire departments, our emergency management offices to build knowledge to give people information about how they can best empower themselves, protect themselves during emergency. That is listening, having emergency kits, having a family plan, knowing evacuation routes, more than one that you actually test with your family at night, because things look different at night than they do during the day, and having family outside the area or friends that you can contact to show that you are safe or to get information.

And things like just the defensible space, which I will let Chief Johnson talk about, how important it is to harden your home. This

is part of taking individual responsibility, and people—we want to give them as many tools as possible to help be part of that solution.

Ms. TORRES. And our local fire departments are doing a great job trying to do that. Chief, if you would enlighten me and as you expand on that answer, can you give us a briefing on how do we also provide information to the millions of visitors that make California their home during their vacation season?

Mr. JOHNSON. California does spend a lot of money on public information via radios, TV programs. One of our more, I would say, program that has been most beneficial is the Ready, Set, Go! program, which identifies actions that should be taken during wildfires. Be ready to create and maintain defensible spacing and harden your home from flying embers. So, there is an educational piece of that.

It can be accessed online, and, or through some of these media events that explain what that may be. Get set, prepare your family and home ahead of time for the possibilities of having to evacuate. Be ready to go, take the evacuation steps necessary to give your family and home best chance to survive a wildfire. This has been adopted by most local entities throughout the entire state. So that messaging is very much the same, but it may have some little twist and added more of a local piece included in that conversation.

We also have the Ready for Wildfire app, which can provide a lot of educational components of what to do during a wildfire but also alert you to when there are wildfires in your area. You can actually set your location so it can alert you. And remember, these are CAL FIRE statewide programs that a lot of our local entities and partners have adapted. So, I think that in the past years of fires getting to where they are at nowadays, a much bigger effort in educating the public.

Ms. TORRES. So, are those grants that are available through the state at local fire departments that they can apply to provide some of that public information in our communities?

Mr. JOHNSON. Yes, mostly every fire station that I have visited has had those documents right there to share at each of those fire stations.

Ms. TORRES. Okay. The last question. Our military has a lot of information and a lot of capabilities that are typically not available to the general public. NASA, for example, has the ability to provide very early warning or early information as a wildfire begins before it turns into the monster that will take then weeks for us to be able to take under control. Have you had any of those conversations? I am looking into legislation on this issue, it is why I am asking. Have you had those conversations at that level?

Mr. JOHNSON. I can brief you on that and then turn it over to Director Ghilarducci. Yes, we are working with the Department Defense on early notification programs. We are actually testing it this year and have been using it.

Ms. TORRES. Through the satellites, right?

Mr. JOHNSON. Through satellites, yes. And so, not to get too far into details, but obviously, a military component has to be thinned out quite a bit for our use, and we are working through some of those growing pains of learning that program. But yes, we have been getting those, and we hope to expand on that going into the

future and have even better use of those notification processes and satellites.

Ms. TORRES. Thank you. Mr. Chairman. I yield back.

Mr. ROUDA. Thank you. The chair now recognizes Congresswoman Brownley for five minutes of question.

Ms. BROWNLEY. Thank you, Mr. Chairman. I appreciate it and thank you, Representative Hill, for hosting us today. And I thank the panelists for being here. Having represented most of Ventura County, Katie and I both have some responsibilities there. I feel like I have gotten to know each and every one of you very, very well over that course, and previously before being in Congress, I served in the state legislature and represented Malibu at the time. And went through two Malibu fires with you as well.

So, I really truly, and my constituents really truly, appreciate your service very, very much, each and every one of you. So, I want to thank you for that. I wanted to ask about the pre-disaster mitigation that was included in the Disaster Relief Reform Act in Congress.

Mr. Fenton, you know part of those resources, it is my understanding, you know, to focus on pre-disaster mitigation is to invest in things—all kinds of things to help end, sadly, the next fires. One of those is installing utility poles that do not burn, and one of the complaints I think that I received from leadership in various cities, particularly in the Administration, is that they felt like the utility poles being rebuilt then, and I understand that we had not passed this bill, or the Administration had taken place, but they were rebuilding telephone poles like the traditional telephone pole or utility pole.

And I know in my experience in the Malibu fires when I come home from Washington, DC. I land at LAX, I go down the Pacific Coast Highway, cross over Malibu Canyon to the 101, and home in Westlake Village. In Malibu Canyon after the Malibu fires, there are all steel metal utility poles going all the way up to Malibu Canyon, but yet from the Administration, we are still replacing the old traditional utility poles. Can you talk about that at all? Was that just a cost element in the moment, or?

Mr. FENTON. Yes, I am not directly familiar with specifically the poles down there. Maybe Mark may have more knowledge. But I do know that we have replaced poles with mitigation money, both post-disaster mitigation money primarily within my region, and a number of different areas both from typhoons and fires. Obviously, you know, there has to be a cost-beneficial rate for us to be able to do that, but we have been able to do that. I just do not know specifically about the ones down there, whether we had involvement or if that was a thing done by the local utility because it made better sense.

Ms. BROWNLEY. I see. So, the resources for that may come out of your budget, it may come out of your OES budget, or a local budget?

Mr. GHILARDUCCI. Well, if they are publicly owned poles, they usually come out of the local utility provider. If they are the IOU owned infrastructure, then it is up to the IOUs to do that, and then they would go back and pull funds from their, you know, maintenance funds to do that. But it has been inconsistent throughout the



state depending on various things from environmental to cost, to what local communities want to have in their community. Some communities, like the case of Paradise, now are going to be undergrounding many other their power lines, but not all communities want to do that, do that, and the costs always seems to rise as an issue. It is a very—it is a topic that continues to get discussed with utilities.

Ms. BROWNLEY. Thank you. Mr. Fenton. Also, I know in your written testimony you talked about through the mitigation framework leadership group FEMA's working with the Federal, state, local levels of Government to help align pre and post-disaster mitigation. The speaker appointed me to the select committee on the climate crisis, so we are trying to really wrestle with the issues of, you know, our global carbon footprint, but also really looking at issues as it relates to resiliency and adaptation.

I wanted to know, you know, sort of what does that alignment look like and where are we—can you identify areas in which we are improving upon that alignment with, you know, Federal, state, local leadership? Can you talk about that a little bit?

Mr. FENTON. So, I think it starts with the state, local mitigation plans and what they understand, what are the gaps every year? We ask that states do a DRRA that looks at risks and gaps within their areas. That works into the state preparedness report and then into their five-year mitigation plan.

California has, just because of the number of fires in the last couple of years, not only do they have pre-disaster mitigation they can apply for every year, but they have almost \$1 billion in post-disaster mitigation that they are using for everything from retrofit projects to reduction of fires, things like ignition resistant roofs to erosion control and hybrids burn areas, to revegetation, to warning systems to upsizing poles because of post-fire potential flooding and mudflows, and those kinds of things.

Ms. BROWNLEY. So, in California then, just in California because I know California has a lot of good laws around this, would you say that we are in better shape than some of the other areas that you cover? And would you say that across California it is relatively consistent from region to region in terms of that alignment, or do you think that it is all, you know, it is all over the place just based on what local cities, and?

Mr. FENTON. Yes. So, I think it is complex because it is very dynamic. You know, we can focus on a burned area collectively, everyone here at this table, and we look at the post-burn area and what to do to mitigate that area for future events, but then there is new housing being built which California is pretty good from a codes standpoint of establishing that, and there is old housing that we need to look at.

As we are constantly looking at all that and where people are building and whether it makes sense from a planning perspective to build in high-risk areas, burn areas, whether it is a WUI area or whether it is on top of a fall. And so, it is very dynamic and complex. I think California has done a good job of creating programs that allow the public to access those for whether it is Bolt and Brace, or other programs in the Wildland Urban Interface area. But California is so big, it is difficult to do that all very quickly.

So as much new construction is happening. We are trying to work on old houses, trying to improve the planning, keep the codes there. And so, it is very dynamic and very complex as we do this. I think California is doing, you know, a fairly decent job better than the most in doing that but it is such a big area, it is such a complex area, you know, where social, economic issues that you are dealing with makes it complex.

Mr. BROWNLEY. Well, I certainly saw the difference just in terms of the Thomas and the Woolsey Fire. Woolsey Fire, if you drove up through the Oak Park area, you could see where the new housing and the new regulations really benefited those communities compared to the city of Ventura, older homes, just neighborhoods were truly just kind of wiped out. So, I certainly saw firsthand the impacts of some of California's laws in terms of housing construction, and that is a very positive thing. Am I under the five-ish rule or the——

Mr. ROUDA. We will get back to you for some additional questions.

Ms. BROWNLEY. I yield back, Mr. Chairman.

[Laughter.]

Mr. ROUDA. Thank you. I now recognize myself for a line of questions. Mr. Moore, you talked about, we had a very wet season and I think a lot of people are under the, perhaps, misconception because we had so much rain and snowpack that we should not expect as severe of a wildfire season, yet as much as we enjoyed the bloom, as well as the mustard bush that is not indigenous to California, it is all now dead and excellent tinder for fires. So, are we under a misconception that with heavy rainfall and snowpack that we have less chance of wildfires?

Mr. MOORE. Yes. Thank you, Mr. Chairman. I do think that is a common misconception that people have. What has happened with this wet season is that you have a lot of grass, tall grass, and now that it is cured through the hot weather, it is more or less kindling for these larger fires. And so, while we have had really decent temperatures in general, all that it has done is delayed the potential for that nasty fire season. Instead of say June, July, it is now a September-ish. And so, over the next couple of months, we are expecting the tension to be quite high for potential fires.

Mr. ROUDA. Thank you.

Mr. MOORE. In fact, it is a misconception to say that we have not had fires because we have had a couple of fires. We have been very successful in putting those fires out on the initial contact. In fact, we have 98 percent successful to date in extinguishing those fires.

Mr. ROUDA. Good. Mr. Johnson, you talked earlier about additional hiring you have done this year, additional assets you are deploying. Can you briefly talk about where the funding for those additional hires and assets came from?

Mr. JOHNSON. The funding came from Governor Newsom to support our more year-round fire season that is occurring, so we bolstered the hiring to earlier in the year and later in the year and asked for additional firefighters to bolster that and to actually get people off duty.

Mr. ROUDA. Excellent. And then this question is really for all four of you so I would like all four of you to weigh in on this. I

think it is of utmost importance that we focus on mitigation. And, you know, just like healthcare, trying to address health care needs upfront is typically a lot cheaper than dealing with the issue in the emergency room down the road.

And so, when we talk about mitigation efforts, you know, it is unfortunate that the President would suggest that buying and training people on how to use rakes is a good solution for mitigating firefighting, and I recognize that you certainly have ideas on how best to mitigate. And you have talked about a lot of that here before, but I want to hear from each of you, your perspective on what the Federal Government can be doing to help in the mitigation efforts, whether it is block grants to the states or additional assets being deployed.

So maybe we will just go right on down the line, Mr. Fenton, and start with you.

Mr. FENTON. So, as I talked about, we work with each one of our states to build strategic five-year mitigation plans to identify where those risks are. And then we have a number of different pots of mitigation money that states, and local governments, could compete for both pre-disaster mitigation and post-disaster mitigation. As I spoke to, California has I think it is a little bit over \$600, \$700 million from a recent couple of years of disasters, and that will only get bigger as those estimates get bigger from those disasters.

It is critical that, I think, we have an overarching plan of where to make those investments at as California is at threat from multiple risks, just not fires but earthquakes, floods, and other risks, and so we need to make sure that those plans, not only at the state level but can carry down the local level, and then integrate the public, that they are aware of the risks, and that we all collectively work together to mitigate and minimize those.

Mr. ROUDA. Let me ask you because you said you were working with local communities to have them apply for grants for mitigation, both pre and post. Do you see times where you have limited assets, limited capital that you are making tough choices, and that some local municipalities are not getting needed dollars to address appropriate mitigation?

Mr. FENTON. So, I think the biggest limitation is the cost-share on their behalf. Right now just because the sheer amount of disasters we had and the new authority you have given us to take six percent of the disaster fund and put it for pre-disaster, started thinking 2020, I do not think there is an issue yet if we do not have enough to make up the 75 percent that we contribute.

I think the issue is local governments coming up with the 25 percent or some type of in-kind resource match, but there is a lot of great mitigation projects going on that we see local governments take on. An example would be, you know, me and Mark were talking about the Truckee Fire Department went ahead and did a program where they replaced non-fire-resistant roofs on residential structure with fire-resistant roofs, with 300 or 400 different roofs that we were able to put on.

Projects like that where you reduce the threat by changing the type of construction for old homes, changes to the risks significantly there. So, there are a lot of good projects out there. What I see is that some entities do not have the 25 percent. I think what

California has done is they have been able to take that and look for ways to match that, whether it is our Brace and Bolt program or other programs that Mark and I talked about how we—

Mr. ROUDA. To get them to thresholds. Good. Mr. Moore?

Mr. MOORE. Thank you. So just in the last two years, the Forest Service alone has spent about \$1 billion on suppression activities here in California. And so, when you look at the fire budget, you have the preparedness budget and then you have a suppression side of the budget.

And what has happened in the past is that when we have exceeded to suppression budget that is where we have fire borrowing or fire transfer. We have a fire funded fix. And so now what we have is that fire budget, preparedness, and suppression. And I think what we have to do is move away from suppression to the degree that we can, and move more into preparedness, looking at making those landscapes more resilient because we will never get rid of fires in California because our ecosystems are dependent over centuries.

And so, what we have to do is start making our landscapes more resilient. And it is going to take more than just one or two entities to do that. I think we have to work collectively across all agencies, state and local, to start looking at making landscapes resilient. But even doing that, you know, after, let us just say the landscape is resilient, we still have to go in and do maintenance on that landscape to keep it resilient.

And so, to give you an example without going too far, we said that we need to treat about 500,000 acres just of mass forestland to make a difference in how fires are taking place here. So, if we treat those 500,000 acres there needs to be a part of that to do maintenance on those acres as you treat it so that it doesn't get back to that condition. And we have estimated that we have a fire—what we call fire interval return.

A fire comes back to a landscape every 15 years. And so, we know that once you get past 15 years, you are running a risk of fires taking place on that landscape again. We have started doing that here in California where we have had the eighty different entities meeting up at McCullen a couple of weeks ago to look at a map and those severe fire areas and then prioritizing all funding to work in those landscapes and try to produce the opportunities there.

Mr. ROUDA. So, let me see if I can summarize it. Are you basically saying that a greater investment in preparedness arguably could reduce the amount of money that needs to be focused on suppression and post-event mitigation?

Mr. MOORE. I firmly believe that, sir.

Mr. ROUDA. Okay. Thank you. Director Ghilarducci?

Mr. GHILARDUCCI. Well first let me just say we are blessed in California to be able to have great partners like Randy and Bob in working with us to try to find the solutions and being as flexible as possible, and it does play out. The more you invest in the front end is the least amount you are going to have to invest in the recovery afterward.

And so, pre-disaster mitigation is absolutely critical. It is the place to focus as we move forward, but that said, let me just kind

of point out five key areas that I think that would help to meet your question. One is to increase the speed of approvals for the mitigation projects. We work with local governments to identify projects but by the time it gets through, it can take a very long time to get through an extensive approval process, and so in some areas, again, Bob is fantastic in trying to streamline that, but there are limiting factors with regards to bureaucracy.

The second would be to broaden the eligibility for the use of mitigation funds to broaden the way you use those funds for more projects to be able to address what Randy talked about. The third is increased funding in the pre-event space. This is all the front-end——

Mr. ROUDA. Preparedness?

Mr. GHILARDUCCI. Preparedness. This is really critical. The fourth is limit or eliminate that cost-share. It is probably the biggest mitigation killer.

Mr. ROUDA. Local municipalities inability to meet the threshold——

Mr. GHILARDUCCI. In particularly those smaller disadvantaged communities that get hit the worst or impacted the most following a disaster cannot meet that match, and so they never get to where they need to get to. And then last is, from your standpoint, leverage the insurance industry to participate greater in the mitigation project effort.

The insurance industry can bring more than they do to the table and we want them to be part of that dialog instead of being on the sidelines and watching what is going on and only getting engaged after the disaster. They need to be part of that.

For example, a mitigation project in retrofitting homes in the Wildland Urban Interface that would, in essence, result in a percentage reduction in premiums, if the homeowner were to retrofit.

Mr. ROUDA. And coupled with that, perhaps, Federal and state tax incentives for homeowners, communities in that direction as well.

Mr. GHILARDUCCI. Exactly.

Mr. ROUDA. Good. Thank you. Mr. Johnson, briefly, please. I will be quick, but these guys took the wind out of my sail here. I do want to make sure that we address the partnership as absolute. In California, we are challenged in many different ways than the rest of the Nation, and without these partnerships, we could not provide the service that we do. Just real quick.

There are three projects and an immediate that are working very well between the Forest Service and CAL FIRE, our Forest Management Task Force, which look at some of these very issues you are discussing and how we can get there faster to get projects done. California is very challenged with CEQA and NEPA and other Governmental concerns so us working together on that helps expedite that. Shared stewardship across our lands as Chief Moore identified earlier, and our good neighbor authority. These actually have allowed us to cooperate together and get more projects done.

Mr. ROUDA. Okay. Thank you. We have just a few more minutes for some followup questions. I will start with Congresswoman Hill. The chair recognizes you.

Ms. HILL. Thank you. I will try to keep this as quick as possible. And you all have addressed this to a certain extent but released in August 2018, the state's fourth climate change assessment to inform state policies to promote effective and integrated action to safeguard California from climate change.

In California, it is clear that serious scientific consideration of the impacts of climate change is essential to meeting the needs of state and local decisionmakers. So, this is to both Mr. Ghilarducci and Mr. Johnson. You have said that climate change has a significant effect on the prevalent size and destructive capability of wildfires in California.

Can you just in a sentence or two say how California has incorporated the risks associated with climate change in its approach to addressing wildfires really in the coming years. I mean, I know we are talking about limited resources from the Federal Government. But as far as long-term planning, what is does that look like specifically?

Mr. GHILARDUCCI. Well, I have to say first the support of additional resources and staffing. Our partnerships for the force going forward for fuels treatments to mitigate some of those interface areas, and certainly the funding to state provided us to partner with local entities as well as private sectors to get these fuels reductions accomplished.

Ms. HILL. And is that focus on the prevention side of things?

Mr. JOHNSON. Yes, and as I would say, investing into preparedness education to the public, making sure they understand that any effort moving forward helps to bite down that threat and helps to protect their lives and property. And so that has been a big focus in all of our efforts all the way down to the local planning commissioners that as they approve new subdivisions, they are putting mitigation on the front end of that checklist versus on the back end of the checklist. That is really important.

Ms. HILL. Okay. So you have emphasized the importance of the partnership over and over again, and I am really glad to hear that between state and Federal authorities, and I am so proud of the work that our Federal officials here are doing, but I am concerned about a few of the things that have happened from the Federal side earlier this year, particularly from the Administration. There was a showdown between California and Trump earlier this year about withholding aid until California does better, but fires actually start very frequently on Federal land that we are supposed to be responsible for maintaining. In fact, the Federal Government owns or is in charge of 57 percent of forest land, if that is correct. Can you confirm that number in California?

Mr. MOORE. Forestland in general, 20 percent of the total land base, but when you look at the Federal Government's Forest Service, BLM, then it is 57 percent of the forestlands in California.

Ms. HILL. Great. So, what are your thoughts on this, and what do we need to do to ensure that the Federal accountability is in place, that it is not just passed off? And, you know, I guess you are kind of beholden to what happens at the Federal level. But to you, what do you think we need to do?

Mr. GHILARDUCCI. Well, let me start off by saying that much has been reported in the news media about the Federal Administration

and the California Administration, and particularly in the space of preparedness. To be clear, we have not seen that challenge come to fruition. Our Federal partners come to the table.

We have not been limited in our disaster recovery funds. The president has declared each of the disasters we have requested. Our fire management assistance grants are approved now in record time, and they have been very, very beneficial. And even the challenge we had, you know, it was really more of an interpretation with the fire management assistance agreement.

We worked through to a positive resolution and we will continue to work on that. We work together to look at maybe some legislative fixes with regards to wording to ensure that it is streamlined into the future. But some of that is a little blown out with regards to——

Ms. HILL. So, it is a lot of talk?

Mr. GHILARDUCCI. So far. But you know, I mean the truth of the matter is that we do know that the Federal Government is looking at reducing the cost of disasters and there is a lot of different ways that they could be doing that. And so, you know, right now so far it has been okay for us.

Ms. HILL. Great. And some say, including our President, that raking the leaves more often would completely prevent wildfires. Can you tell me why that has not been employed?

Mr. GHILARDUCCI. Well, we do have a strike team of rakers, but go ahead.

Mr. JOHNSON. Well, I think he has probably visited other countries that have had some forestation, really hard work and seen clean forest floors, but in some respects, that is true, we need to clean up our forest. That is part of our fuel projects that we are working on. But again, I support Director Ghilarducci's comments that we have seen the help coming and we have not seen anything turned down right now. So, I think going forward really there is a lot of emphasis on the last five years of our fire activity so the educational piece is huge, and we can get that message across national.

Ms. HILL. So, I have a quick question from a constituent, and I want to thank Senator Patel for bringing this to my attention, but there is a species called *Arundo* that you might be aware of. It is an invasive species along the Santa Clara River, and it is destructive in a number of different ways, including contributing to masses of dry vegetation along the river.

So, the question is whether some of the money dedicated by CAL FIRE could be used to remove this species, or at least to the extent of creating fire breaks if that is on your radar at all?

Mr. JOHNSON. It is, but it is more of a local entity. Most of the state lands outside of those local washes and rivers that have—I believe you are talking about the cane. It looks like bamboo, very similar. Some of those grants are opening up now and we may be able to reach some of those issues but are currently our interface is more of a concern than the river bottoms.

Ms. HILL. Thank you all so much.

Mr. ROUDA. Thank you. The chair now recognizes Congresswoman Brownley.

Ms. BROWNLEY. Thank you. Mr. Chair. Mr. Ghilarducci, I wanted to ask you, you gave your five recommendations, which I thought were very good. Is there any legislation regarding any of these in Congress at the moment?

Mr. GHILARDUCCI. I think there is one that is sort of tangential to this that has to do with when we provide grants, for example, for retrofits down to the local individual, if that individual were to be getting that grant to retrofit their home, they are taxed on that grant and we are asking, in the state of California, we waive that tax.

It is an incentive or disincentive for the homeowner to get engaged if they can give taxed on a grant that is a few thousand dollars. And so, I think there is a resolution is moving forward to streamline that. Outside of that, I do not know of top my head if there is any specific—

Ms. BROWNLEY. At the state level?

Mr. GHILARDUCCI. At the state level, there are a number of mitigation bills that are currently working their way through the legislature, have to do with retrofit of homes, and utilizing a hazard mitigation funds for not just retrofits, but for also other kinds of fire mitigation efforts, as well as some bills that are focusing on local planning commissions and local planning communities and being able to build more resilient communities to ensure that those general plans reflect the mitigation efforts that are required.

Ms. BROWNLEY. Thank you. And the other thing I just wanted to hit on briefly is debris removal. And I know for the Thomas Fire we were very lucky because CalRecycle did our debris removal and it happened very quickly. I think probably at record speed. Where the Napa fires up North that had, you know, they were still in recovery because the Army Corps of Engineers was doing their debris removal. So, has FEMA or is the Federal Government looking at all toward the Army Corps?

I do not know whether it was just there are so many fires there and there is just a limited amount of resources is the cause, or whether the Army Corps needs to improve upon their approach to debris removal.

Mr. FENTON. Yes. So, in the 2017 fires that you mentioned, the state and CalRecycle had taken on a number of fires already and were stretched thin. So, the state requested us to use the Army Corps of Engineers to remove the debris.

And in retrospect, I think what we learned from that event is a lot of the contract tools the Army Corps uses and their bid out regionally for the United States are geared toward what we would see after hurricane type of debris. And so, we have been working with the Corps to rebid the West Coast to make the contract more toward what we see after fires and earthquakes, which would be different than what we see as far as the vegetative debris, you know, after hurricanes. And in the meantime, I think as we went into 2018, the state took on the debris mission with CalRecycle. They had the capacity to do that.

I think we all learned from 2017 and they were able to use those lessons learned and are doing a great job both North and South and will finish ahead of schedule up North with regard to the debris removal. We partner together, you know, as far as the moni-



toring, the management, all those kinds of things to make sure we can maximize the reimbursement of anything the state does.

Ms. BROWNLEY. Thank you and I yield back.

Mr. ROUDA. Thank you. And before we go to our next panel, two items. One, just want to let the four of you know that we may, as the members here, at the dais have followup questions. We will submit those to you in writing and we hope that you would answer them in a timely manner. And second, I would ask that the staff of the Oversight committee and the four members here who are sitting behind me, in front of me, and some in the audience, please stand up for a minute. Please stand up. Come on. Do not be shy.

Mr. ROUDA. Well, I just wanted the staff to stand up. I see staff over here, please stand up. And the reason I am asking him to stand up is that as you can see the staff that we have here in our districts and on the hill tend to be very young and these are incredibly impressive young people. They are brilliant. They work as hard as anybody you will ever see. They work for peanuts and they are true patriots and I will tell you our country is in good hands going forward. With that, thank you for the first panel.

I really appreciate your time and we will seat the second panel and get started again.

Great, we will get started and now welcome our final witnesses and thank you for your patience. We have Max Moritz, Cooperative Extension Wildfire Specialist, Bren School of Environmental Science and Management. Doctor Afif El-Hasan, Pediatrician, Kaiser Permanente, California. Brent Berkompas, Director of Government Affairs, Orange County Professional Firefighters Association. And Mr. Smith. I do not have your official title so could you quickly provide it for me?

Mr. SMITH. Yes. Battalion Chief, Los Angeles County, Fire Department, and Department Fire Behavior Analyst.

Mr. ROUDA. Great. Thank you. Well, thank you all four of you for being here. If you could please stand all four of you. Do you swear or affirm that the testimony you are about to give is the truth, the whole truth, and nothing but the truth?

[Witnesses sworn.]

Mr. ROUDA. Let the record show that the witnesses answered in the affirmative. Thank you. Please be seated. The microphones are sensitive so please try and speak directly into them. Without objection, your written statement will be made a part of the record. With that, Mr. Moritz, you now are recognized to give an oral presentation of your testimony for five minutes.

**STATEMENT OF MAX MORITZ, COOPERATIVE EXTENSION  
WILDFIRE SPECIALIST, BREN SCHOOL OF ENVIRONMENTAL  
SCIENCE AND MANAGEMENT**

Mr. MORITZ. I have a presentation here. This will be a little different, but it is part of my job. I am deeply appreciative of the opportunity to be here, and I have studied wildfires for 25 years. So, as a scientist and science communicator, this is all I do, my whole life. And the last few years have been as tragic as they have been. They have been even more heartbreaking for a lot of us studying wildfire actually because we have a lot of knowledge that is not making its way into policy discussions.

So, for that reason, I really do honor and appreciate the invitation and the ability to be here. That is where I am. I am at UC Santa Barbara. If anyone wants to talk about policy improvements and changes, I am more than eager to contribute. At the outset, maybe I would start off with just a key take-home message and that is that we have more than one wildfire problem. And actually, the fact that is that it is a complex problem and it is often talked about as this kind of monolithic thing, the wildfire problem.

We actually do not make progress toward solutions because we think of it as this monolithic thing, and until we are more careful about which wildfire problem we are talking about, trying to fix, actually you are not going to make a lot of progress. We are going to continue to have debates and not make a lot of the changes that we need to make. So, as an example that I was going to tell a little story, a little narrative that I run into my whole career. You will hear it in the media.

You will hear it with the general public, politicians, and it sort of exemplifies this issue or this problem. One is that we have got trends of increasing fire activity in the past several decades. We have got projections for future fire activity. They are going to be increasing. These came out of my lab several years ago. But there is general agreement that there have been more, larger fires due to climate change, as you guys mentioned.

Some other factors too. That was linked to often more severe forest fires, right. Larger, higher fire intensities, and those, in turn, are often linked to increasing home losses, and in our worst-case scenarios, those home losses are turning into kind of quasi-urban conflagrations, right. The Wildland Urban Interface, the WUI. We have heard that term. It has actually entered into common parlance now. But this linkage of more fire activity, more forest fires, more home losses, more disasters, I think if you really look at this as a causal chain of impacts, cause and effect chain of events, you learn something from this. It actually helps us tease apart this problem and start to make a little more progress.

So, for example, on the home loss side, we see this over and over in the research environment, we will go out and look at post-burn environments, we will look at events. You notice that the vegetation often around the homes is not burning, and you go in after the fires, even Paradise, a lot of those neighborhoods that burned the vegetation is often still intact. The homes themselves are gone, right, and that is really an interesting indicator of what is causing the homeless part of this problem. And it turns out that most homes actually burn due to embers, bits of flying burning vegetation. They may come from far away. They may come from the adjacent home that is burning, but they are driven by high winds against and into homes, and a lot of homes burned from the inside out.

Second, most of these home losses, really high numbers, they are not in forests, right. The Wildland Urban Interface is not your traditional forested environment. And for a lot of the calls and debates that we hear over the news, forest thinning, and we are not doing enough for this to that, is actually not that connected to the homeless problem. The homeless problem is one of where and how we have built. And that actually, those do get conflated and that keeps

us from actually making some meaningful progress on some of these issues. So which problem are we trying to solve? There is a forest loss problem, right, and it has got climate change and fire suppression all feeding into this.

That is one set of problem. That is largely a land management problem out there in the wildlands. The homeless problem really is not land management and a forest fire problem, but it is one of where and how we built. So, this gets us, if we focus the lens, this turns this more into a public health and safety issue and an urban planning issue. And I think if you disentangle those, we can start to look at solutions that actually help. I do not even remember what these lights mean, but so I am probably going to have to circle back because I think you are going to cut me off—

[Laughter.]

Mr. MORITZ. But here are some ideas. Locally, our Forest Service lands are really underfunded in the places where we have lots of people. Why don't we allocate some funds to our Forest Service lands that are proportional to the exposure of the WUI? There are millions of homes across the Western U.S. on fire-prone landscapes, right. We need regional mitigation programs to retrofit the people, the homes, and the landscapes, right.

The traditional approach of community wildfire protection plans, CWPPs, we can go into this later if you want. They are very important, but they are not enough. Urban planning, we have to focus on where and how we build. And the flows of taxpayer funds. This is something I think is very under-appreciated. Transportation funds, housing, and urban development, these all inadvertently lead to an incentive development on hazard-prone landscapes.

So, I think that if we recognize it more as a public health and safety problem, we would have some different solutions.

Mr. ROUDA. Great. Thank you very much. Doctor El-Hasan?

**STATEMENT OF AFIF EL-HASAN, M.D., PEDIATRICIAN,  
CALIFORNIA**

Dr. EL-HASAN. Good morning. My name is Afif El-Hasan, and Mr. Chairman, Representatives Torres, Hill, and Brownley, thank you for having me here. I am a pediatrician and have been practicing in Orange County, California for the last 23 years. I have an active interest in asthma, and I take care of many pediatric asthma patients. I am also a volunteer and governing board member for the American Lung Association in California.

The impacts of climate change on creating or worsening natural disasters are unfortunately clearer than ever, as we already discussed. And I would like to focus my time on the human toll and the health tolls from the wildfires in California over the last few years. Wildfires cause significant air pollution, and the type of particles that come from wildfires can vary.

Other factors that influence the content of the air pollution from wildfires include the type of vegetation that is burning, the temperature of the fire, and the other man-made objects that also burn during wildfires, which Mr. Chairman you had mentioned earlier. The smoke can contain carbon monoxide, carcinogens, and most importantly, particulate matter.

The particulate matter comes in many sizes, but what is interesting is that the particulate matter from wood smoke is an especially fine type of particle. It is 0.4 to 0.7 microns in size. Just as a reference, a micron is a millionth of a meter, and the average human hair is about 50 to 100 microns wide. So, we are talking about some pretty small particles here. The small size of these particles allows them to bypass many of the defenses of the lungs to infiltrate into the alveoli. And then from there, these particles can then pass into the bloodstream, which allows them to affect the other parts of the body. The particles are linked to asthma, lung disease, heart attacks, strokes and arrhythmias, and they can cause neurological problems and cancers as well.

This is an important point when dealing with any source of fine particles, whether it is the exhaust from a diesel engine or from a wildfire. So just to emphasize, these particles are a danger to the entire body, not just the lungs. The lungs, unfortunately, are just a gateway to the rest of the body. And please also note that an area that has experienced a wildfire will also continue to shed fine particles after the fire has resolved due to the presence of ash. Anyone who has walked through an area that has been subject to a fire will know that they can still smell ash for days if not weeks after the fire has been snuffed out.

Going back to clean up efforts, there is a public health need for it as well. There is some disturbing data from the California wildfires in 2017 regarding the PM 2.5 particles, which are the particles that measure an average of 2.5 microns and are the most dangerous to the body. The 24-hour air quality standard set by the EPA for PM 2.5 is 35 micrograms per cubic meter of air. The Sonoma-Napa wildfire in 2017 had a measurement of 200 micrograms per cubic meter, and a measurement of 70 micrograms per cubic meter was noted in Oakland during that time.

The bottom line is that the wildfires not only increase the amount of toxic particles in the surrounding area by multiples of the safe levels, but it also causes dangerous levels much farther away. Carbon monoxide, which can kill quickly, is another pollutant from the wildfires and is an especially serious threat to firefighters since it is impractical for them to wear self-contained breathing apparatus while fighting the wildfires.

Local residents are also in danger of carbon monoxide poisoning from intense wildfire activity. Some of the unfortunate victims of these fires were people who died in their swimming pools with masks on hoping that they could protect themselves, but the carbon monoxide was what got to them. As a pediatrician in Southern California, I have witnessed the effects of the wildfires in my area. During these periods of time, I have seen dramatic increases in asthma attacks.

I have also seen respiratory problems like pneumonia and sinus infections in children with no prior health issues. It has become necessary for me to start prescribing or increase the dosage of preventative asthma medications for my asthma patients during wildfires, due to the dangers of these fires to the asthmatic patients and to all my patients in general.

The wildfire season is also a time when children are playing outside, doing sports and other activities. The increased pollution in

the air has forced these children and their parents to choose between playing in polluted air and remaining sedentary within the house. And we are also at a time when there is a public health issue with too much screen time and too much inactivity for children.

So, we already have poor air quality throughout California. This is already taking a toll on the health of our children and the adults as well. The wildfires have only contributed to the problem. Some ways to mitigate some of the harm from the increased air pollution from wildfires are to close the windows of houses, use asthma medications as needed, and drive a car with the windows closed. But these actions cannot completely protect my patients from pollution. And in addition, all of these actions cost money. It is expensive to close your window and run an air conditioner, and not everyone can afford a car because some people have to take the bus and wait at the bus stop.

Treatment of asthma and other respiratory conditions involves buying sometimes expensive medication and possibly taking time off from work or school. Protecting your health after a wildfire can be a costly endeavor even if there is no property damage from the fire. And as I mentioned, unfortunately, the underserved can often have a greater and costlier impact to their lives and health as a result of the wildfires, and pollution in general, due to the lack of resources to shield themselves from the health impacts of the worsened air quality.

So, thank you very much for your time and your partnership in helping the people in this state to protect their health and well-being during these unfortunate disasters. Thank you.

Mr. ROUDA. Thank you. Mr. Brent Berkompas, please? Five minutes.

**STATEMENT OF BRENT BERKOMPAS, DIRECTOR OF GOVERNMENTAL AFFAIRS, ORANGE COUNTY PROFESSIONAL FIRE-FIGHTERS ASSOCIATION**

Mr. BERKOMPAS. Chairman Rouda, Representatives Torres, Hill, and Brownley, I thank you for this opportunity. This is truly a pleasure and I am very grateful for the opportunity to present here today. This is an important issue and it is an issue that impacts me both professionally and personally, and I will discuss a little bit more as to why. But I want to distinguish really quickly that I wear multiple hats on this issue, and I come at this issue from multiple perspectives.

First and most importantly as the Director of Government Affairs for a local 3631. That is the Orange County Professional Firefighters where I represent over a thousand members, men, and women, whose job and professional mission it is to protect communities and protect the lives of the people that we serve and the communities that we serve. So, addressing this issue and the impacts that the sustained wildfire seasons have on these people is of the utmost importance to me and my membership. We are seeing the impacts on our members physical and mental health of the sustained wildfire season.

The times taken away from their home, the weeks that they are spending on assignment on these fires is increasing in size and

scope. To put that into perspective, I think it is important to understand what our mission is and to be empathetic to what that mission is, it is to protect homes, it is to protect property, it is to protect lives. As we are seeing these catastrophes worsen, it is having a profound impact on my members because our mission is being met with an increasing problem, and to see one person lose their life, the impact that has on families, to see one person lose their home, is profound. But to see whole communities devastated is—the impact on the people that serve is profound and it is bearing out in the way of our physical and our mental health being impacted. So, I am here to address that.

Also, it should be noted that as a responder to the 2003 wildfire seasons, I saw a real problem with the way our built environment was constructed. We had these homes in these communities that were built in a way that were—at the time the building science was pretty clear on how to address a wildfire. It was, you know, the building envelope was addressed, the roof, the siding, and all of those types of things. There is a number of different vulnerabilities our structures are still having, and we still lose structures.

Mr. Moritz addressed it pretty well. We are still seeing homes and communities being lost, even though to the best of our efforts, we are addressing it in the building standards and on the prevention side of things. Develop a product that addresses the wildfire problem. So, I have sat in on the building standards commissions and seen how building standards are rolled out here in the state. I have worked with builders, architects, contractors, and I have also seen a number of these grant programs and efforts to harden our communities. I have seen programs that work, and I have seen programs that are well-intentioned but have less of an impact on our built environment.

So, we can talk to that issue or we can talk to the issue of the people that I represent also. So just to be clear.

Thank you.

Mr. ROUDA. Thank you. Mr. Smith, you are now recognized for five minutes.

**STATEMENT OF DREW SMITH, BATTALION CHIEF, LOS ANGELES COUNTY FIRE DEPARTMENT**

Mr. SMITH. Yes. Thank you for having me here, Chairman Rouda, Ms. Brownley, Ms. Torres, and Ms. Hill, and especially Ms. Hill and Torres. Actually, understanding the gravity of wildfire and having it impact you set a different tone for your vision of what kind of needs to happen here locally and across the Nation. So, a little bit about me. I am a Battalion Chief of the Los Angeles County Fire Department. I am responsible for the field leadership and command a Battalion 5, which is the boundaries are the 101 freeway between Hidden Hills, Calabasas, Agoura Hills, Westlake Village, unincorporated areas of Topanga, also the city of Malibu in the Santa Monica mountains range.

My collateral duties also include serving as a Fire Behavior Analyst and Operation Section Chief for the organization, and in that Fire Behavior Analyst position, I look at the daily relative risk of wildland fires, the projection of wildland fire size and complexity,

tactical challenges and opportunities for those combating those fire. I also look at the interpretation of whether fire behavior forecast, implementing fire behavior forecaster, and operational period, and their relationship and impacts with fire dynamics and person on the field.

I also work as a Fire Behavior Analyst and Operations Section Chief on a National Interagency Incident Management Team. So, my background within the 31 years of working for the Department is around wildland fire management practices, watershed conservation, wildlife sustainability, and operational efficiency, but first and foremost, it is the public safety element of why we do what we do.

I have many credentials and qualifications to be a subject matter expert in this wildland discussion forum, and I thank you for that. An overview of the couple of topics that I have are some of the fire history, fire regimes, fire dynamics, daily relative risks, cooperating agencies, and identifying management and operational objectives. So, Los Angeles County specifically, but it really incorporates most of California and every place in California has its unique quality based upon its ecosystem, its watershed, and civilian life that works around their households and how it impacts them through the infrastructure.

Thousands of acres are burned annually in Los Angeles County and the targeted month show barren seeds and fire frequency and size due to environmental factors. Historically, Los Angeles County has potential large fires during the fall and fall months, which is September through December. The fire regimes within Los Angeles County range from seasonal inland desert areas beginning in May, with Foot Hill and Valley coastal zones into summer and fall months. Fire frequency is predominately by human-caused rather than mother nature.

Human-caused fires frequency is predominantly due to careless acts or being naive, mechanical failure, or arson. Mother nature fires lightning-caused has low fire frequency but is usually routinely in July and August or in our monsoon times as we get those easily throughout Los Angeles County mountain areas, and sometimes through the coastal areas. A fire can happen year-round yet certain environmental conditions need to be present to support aggressive and large fire growth. Nature's fire regimes with the mosaic burn patterns have not been in existence for over a hundred years in Southern, California.

Fire dynamics range low extreme and early summer months fires are routinely topography driven under average, outside air temperatures, and relative humidities, and can be combated with much success. But however, on high-risk days, fires become more extreme and there is a higher resistance to control with those fires. The most aggressive and intense wildland fires exist where heavy fuel loading is present and widespread over this topography. Those environmental conditions and fire factors created a really large fire environment that also impacts homes when they are in the way of the path of the fire.

One significant factor that supports large fire growth is an ember cast ahead of an advancing fire front that starts new fires, and those ember casts can be on oncoming fuels and, or in communities that have their nice ornamental vegetation around them, or

unmaintained, or unwitnessed problem areas within the homes that are subject to promote fire growth within the home. Information just, excuse me. For Los Angeles County we do a daily fire danger analysis using RAWs, Remote Automatic Weather Stations, that look at the climatology and also the fuel factors, and this identifies the factors that determine our vulnerability based on initial attack component or large fire growth. Fire law enforcement agencies have the ultimate responsibility for public safety.

The public safety element exists year-round for any type of incident. A fire can or may occur and can jeopardize public safety, and we use an incident command system, it is very organized, that distributes resources, your organizational control, and a delegation of authority through leadership positions and supervisory positions to combat this. So once again, the primary principle of life safety and the public is the first responders with public safety in mind.

A lot of fire burning on our high-risk days challenges resources for combating the fires and providing that reflex time for evacuation, shelter, and place potential, and within the incident command system and the unified command system structure, it has been utilized and exercised effectively in California for over 30 years. And the cooperation between local, state, and Federal public agencies is well refined.

Thank you for your time.

Mr. ROUDA. Thank you. Thank you. Mr. Smith, and thank you to all of the witnesses for your opening comments. The chair now recognizes Congresswoman Torres for five minutes of questions.

Ms. TORRES. Thank you, Mr. Chairman. And thank you to all of you for the work that you do. I know it is not easy being in that line of work. You know, when talking about grants that are available to the community for outreach, I happen to live in a community where you cannot, obviously, none of us can't control which way the wind is blowing, right. My community happens to receive the wind from everywhere and it gets stuck there.

So, when a Congresswoman, my colleague from Ventura, has a fire we are the ones that are inhaling the ash and the smoke and everything else in between. So what types of grants are available for communities that are not necessarily on a fire zone, are not necessarily, you know, the victims of critical mass fires, but are the afterthought of many of the issues and are the ones that are going to happen to suffer very, very long term impasse of a wildfire, Dr. El-Hasan?

Dr. EL-HASAN. I do not know of any significant programs that are available, but I do know that most electric companies do have reduced rates of electricity for people who need medical devices, and in those situations I think it would be very important for—if a family does not have air conditioner for the whole family, get one for one room. A HEPA filter inside the house is an excellent way to keep the inside air healthy, and there is medical justification for that.

Most doctors, I think would sign off on that, especially if there is anyone in the house with lung issues. So, there are—but I do not, there is no large universal grant. I just would like people to utilize the health insurance they have, whether it is just, you know, whatever it might be and also maybe your review of medical



insurance as well to make sure that they are providing adequate coverage for preventive actions that can be taken. We have talked about preventative for the fires. There are a lot of preventatives, things people can do in their house with their own personal health.

Ms. TORRES. So, I have Sotelo tile and we recently cleaned our tile, and just to give you a picture of what was coming up [it] was ash, black ash coming out of the Sotelo tile that is in front, right. That is not the fire in our immediate community, but that is miles and miles away. If the tile looks that bad, then someone like me that has asthma, then we become prisoners of our own home, which is, you know, one of the reasons why we have to be aware that there are grants.

We passed an amendment last year that would allow for a family to apply for a \$10,000 grant to help them improve and get ready for an emergency. So, you know, what does that mean? An air conditioner that they might need, maybe, changing the roof tiles. It is not a lot of money, but it is enough to help with the things that we normally do not think about because they do not come with a \$50,000 price tag, for example.

Last year San Bernardino Riverside County had a—during fire season they engage the entire community in a community campaign to report any spark at any time 24/7, dial 911 when you see smoke, and I think that they were very, very successful in engaging the entire community in this awareness campaign to ensure that they were notified immediately as fires began, and again before they got out of control. So, I wonder if L.A. County or any other statewide—if there is a statewide initiative to help engage the communities as a whole?

Mr. SMITH. We have a significant public outreach for early activation and early warning that we engage with the communities and we talk to our local cities depending on what portion of Los Angeles County you are in and our field Battalion Chief through the station interactions with public safety awareness days, with come and meet the fire station, with our robust public education campaign, we do have that.

We have that in place, and we engage with the public to educate on an early warning. The earliest warning that you could have on a wildfire that starts, the earlier warning we have to get resources there to combat it.

Ms. TORRES. We have the shake alert for earthquakes. Do we have anything like that for fires?

Mr. SMITH. I do not know that if we have a certain system—

Ms. TORRES. App?

Mr. SMITH. Or app, right. I know that it is communicated very well throughout the cities within the Los Angeles County, and actually throughout Southern California because of this wildfire threat. We have—education is in place with the organizations.

Ms. TORRES. Thank you so much and I yield back.

Mr. ROUDA. Thank you. The chair now recognizes Congresswoman Brownley.

Ms. BROWNLEY. Thank you, Mr. Chairman, and thank you again to the panelists for being here. I certainly want to thank Mr. Berkompas and Mr. Smith and all the men and women that work for you. We are indebted to you and firefighters who really put

themselves on the line every single day to protect our communities. I represent most of Ventura County and experience the Administration and the Woolsey Fire, and was, by the way, evacuated.

I live in Westlake Village, on the Ventura County side, but was evacuated during the Woolsey Fire. But in both fires, you know, it was just so impactful to see the amount of firefighters from all over the country that came and were called, and to see them at the command center and, you know, thousands of trucks everywhere from different parts of the country. I just cannot tell you how my communities are still—we still talk about how grateful we are to the men and women that came to help us in a great time of need. So, we thank you for that very, very much, and as we have been talking today about the increase in fires, we do not have a fire season anymore.

It just seems to be literally almost all year round. I guess my question to you is, are you getting the resources that you need? We are talking a lot about health implications, so are you getting the resources that you need to protect the men and women that you represent? And my second question is the impacts of being involved in a fire and the toll it takes not only on the human body physically, but the mental implications as well. Do you have the resources to address those issues?

Mr. BERKOMPAS. Thank you for the question. It is very thoughtful. I will address the impact side as it has a direct correlation on the men and women that I represent. We are just beginning to understand more profoundly the mental health and the mental anguish side of things, and as an industry, the fire service is starting to address that in a meaningful way. You have to understand that you are dealing with a culture, you are dealing with men and women who are very proud, and to raise their hand and say that they have an issue or there is a need there is not something we are accustomed to doing.

So, changing the culture is the first part but identifying and getting those resources to that member in a timely manner is equally important. So, it becomes a matter of training our own people because we are typically either the families or the co-worker or the first folks that start to recognize those impacts and those changes from the midline. So, do we have enough resources? The answer is profoundly we do not have enough resources to address the mental health issues.

We really need to address those, the impacts that these types of events are having on our people, and to really drill down into what it takes to keep our people both physically and mentally healthy. So, we are starting to, but we are just scratching the surface and as our level of understanding improves.

Mr. SMITH. I will talk to the resources on a fire. So, when a fire starts, we look at how large the fire is going to get, how many resources whether it be by ground or by air to combat that fire. And with that, we are all prepared to be up for 72 hours straight. As we come self-sustained, that we have meals ready to eat on our rig, we have Gatorades, we have water. That is the intent for what we do when we are in an aggressive firefight because we need to be self-sustained for 72 hours.

If we go within that 72 hours, we start to get a work-rest ratio that goes on. I am sure you went to different incident command posts and saw quite the setup that goes on and then you get into the operational periods, whether we are going to work 24 hours straight with all of the resources, then 24 hours off, or we go 12 on and 12 off. Our resources and our folks work a lot of hours to get the job done.

That level of engagement that you have to have to keep that operational tempo takes a toll on our folks. As far as getting resources—is that one of your questions? How do we get the resources?

Ms. BROWNLEY. Well, I am just wanting to make sure that you have the resources, but that you have the dollars and whatever the Federal Government's role is in terms of having the resources you need to do all of the things that you are talking about.

Mr. SMITH. So that can be quite complex. Some of that depends on how the unified command structure is set up and whose land it is, whether it is on state lands, Federal lands, local government lands. So, the allocation of resources go in through a request, and this is many resources that we need, and whether it can be filled, comes into play.

For an example, as you know living in Southern California, our Santa Ana winds can be widespread. And so, the resource allotment - if you have a fire - is going to be very challenging for a fire chief to make the decision to relieve some of his engines from their regular duty to go help when they have their own high-risk day. What is good about Southern California...we are very robust with our amount of resources that we have.

We have the largest set of resources available, but they get tax, especially when there are multiple fires which you have seen. So, on the funding, I cannot talk to the funding. They are there but whether or not they are available based upon their own relative risk or their own daily activities can be challenging.

Ms. BROWNLEY. Thank you, Mr. Smith. I know my time is up, but I wanted to say too is that I know that there is a bill in Congress about the mental health side for firefighters, and I am in support of that bill, I am the co-author of the bill and hopefully, we will see some progress and success. The suicide rate among firefighters is on the up and it is something that we really need to address.

I sit on the Veteran Affairs committee, so I deal with the suicide issue amongst our veteran community, both men and women. I think that there can be some cooperation because I know that the VA has done a lot of research in post-traumatic stress and they do a lot in terms of addressing this issue. This is a front and center issue when it comes to veterans and the men and women who are coming back from combat.

So somehow I think in the Federal Government we need to figure out ways in which we can share that knowledge and share those knowledge resources with firefighters, but I understand too that we have got to provide the resources there to have the mental health support that the men and women need. I know all of us here want to help and assist in that process, and I hope that we will have better success.

Because you put your lives on the line every single day just as our veterans put our lives on the line every single day, and it is our responsibility to make sure that we take care of the men and women that you serve and that serve us. So, I again, very, very grateful for your services and I yield back.

Mr. ROUDA. Thank you. The chair now recognizes Congresswoman Hill. Four or five minutes of questioning.

Ms. HILL. Thank you so much. I want to echo what Congresswoman Brownley said about the importance of what we are doing at the Federal Government and I am really glad to hear the emphasis on mental health services. It is a real passion of mine and the fact that we are seeing these kinds of effects is tragic, and I am so grateful for the work that you all do.

Is there anything, just because of the time limit that she had, is there anything you want to add, especially what we in the Federal Government can do to support in this effort? I know you talked about the challenges around the command structure. Is there anything that we can do to help to kind of alleviate that or make it easier and provide additional resources to support the firefighters?

Mr. SMITH. The biggest thing is recognizing that we need more help, and how we get that help at the Federal government level, the state level, and the local level will greatly enhance the public safety element. With all that and Southern California - really - the all-risk is what we have. Identifying how we could increase our staffing - as you know - with personnel you...you can handle a task somewhat easier. Not that it is easy work but if you have more folks on hand to handle that task, it becomes supportive in the fire-fight.

Mr. BERKOMPAS. I would add to that, there is a grant called the SAFER Grant and it is renewed every couple of years at the Federal level. It is a critically important grant for our profession. It helps with the adequate and just the basic levels of funding at the operational level. So, the SAFER Grant to us is critically important, and what we seem right now we are in an incredibly competitive job environment.

And so, the staffing levels at all the major agencies, whether it be L.A. County, Orange County, L.A. City - all of the majors and even the minors - we are competing for the same. The workforce is competitive - and keeping those staffing levels, and keeping that high caliber of candidate coming through the front door - is instrumental. So, programs that help mentor our young people and steer them toward a career in the fire service, females, you know, and folks that normally would not have gravitated toward the profession, we need to encourage that. We need apartments that are reflective of their communities.

Ms. HILL. Thank you so much. Dr. El-Hasan, you mentioned specifically that there are also deep concerns posed to firefighters, health concerns posed to firefighters and first responders as a result of carbon monoxide. Do you have any specific recommendations to local, state, or Federal officials on how we can minimize those risks or, you know, is there certain gear that we need to be investing in?

Dr. EL-HASAN. It is a good question. I think from my end since I do pediatrics although I take care of a lot of firefighters' kids, al-

ways have happy to do that. I would actually though, in general, have to say that the protective gear that they wear is extremely important and I am sure that they would echo that, that we have to be very realistic about our expectation of where we send our first responders because we could put them in a situation where we do them every irreparable damage to their bodies. It would not take very long.

And back to what Chairman Rouda was saying about some of the things that are burning out there are not just wildfires, especially if it is toxic. We need to make sure that everyone is appropriately protected because you never know what they are walking into. And sometimes the particulate matter is the least of their problems.

Ms. HILL. Thank you. And Mr. Moritz, in your written testimony you state that we need to address WUI, which I think is a funny term for it, but by focusing on how and where we build our homes. Can you briefly discuss how local governments can use urban planning to prepare for this? And, you know, this is important to me because several of the cities in my district that touch, I guess, wildland are expecting pretty rapid growth in the coming years.

Mr. MORITZ. Yes, so I think urban planning is a very underutilized tool. I think a lot of people, a lot of policymakers, and even a lot of fire professionals kind of throw up their hands and say, well urban planning is all very local, right, it is all locally driven, and to a certain extent that is true. In California, however, we are a little bit unique in that CAL FIRE has a land-use planning program. So, every single general plan for every community has to go through an update and CAL FIRE's land use planning program gets to weigh in on that.

So, there is a way that, you know, some top-down guidance actually gets integrated into land-use planning. A lot of it comes from OPR, the Office of Planning and Research as technical guidance on hazard, and that is also what a lot of local Fire Marshal's offices use is that guidance. And that guidance document is actually fairly thin. It really only talks about water supplies, roads in and out, and a little bit about defensible space. It really doesn't say much about the sighting of communities, the layout of the community.

So, all that could be beefed up in our Office of Planning and Research Documentation. Outside of California, you know, California is kind of lucky because we have those regulations. We also have fire hazard severity zone maps, which guide building codes, a huge improvement over not having them there. It is like using flood plain maps to guide building decisions. Other states could benefit greatly from those kinds of approaches.

Ms. HILL. Thank you. So just to wrap it up, Mr. Smith and Mr. Berkompas, you also talk—you spoke with committee staffers and in your testimony you talked about importance of land management and so I just wanted to kind of finalize it by asking if any of you believe that there is a role for the Federal government in assisting local and state governments with wildland interface, urban planning, land management, and I do not know what that would look like, maybe it is grants to further facilitate these kinds of efforts, but just any ideas that we can take back and consider with our colleagues?

Mr. BERKOMPAS. Yes, I would look at programs like Energy Star and as a success and how that was implemented in the incentives that were given to homeowners for replacing appliances as a model for how you might incentivize communities to do the type of structural hardening that building scientists, such as Mr. Moritz and his team and others are doing. So that would probably be a model that could be implemented from the top down at the Federal level.

Mr. SMITH. So, with land management and looking at the home and working out, the more energy release that you have coming out of a fuel bed, that happens when you do not have fire frequency. So, as these fuels get more large, robust because they have seen the wet years, they have seen the dry years, so this fire regime that has not been here, it gives us a tactical disadvantage for protecting homes.

Based upon an urban layout, how it is or is not is what challenges firefighters, whether they are ground resources or air resources. We have a lot of air resources, but they become very ineffective when the energy released out of the fuel bed makes it very dangerous for pilots due to wind speeds and environmental conditions based upon the fire itself. You do not have the same set of tactical challenges in lighter fuel beds. You have a different set of tactical opportunities to engage in the fire to have success when you do not have the same energy coming out of the fuel bed.

Mr. MORITZ. If I can circle back to the earlier point you tried to make, that there are probably billions of dollars that come to the states and that end up encouraging road development, housing and urban development funds. I have talked to a lot of land-use planners who have plenty of case studies where they will say, yes, you know, when those new roads went in there, it is sort of like if you build it, they will come. Then the neighborhoods came and all of a sudden, we had a community, an incredibly risky place.

If Federal funds, as they flow to the states, had some stipulation about being—they had to be prioritized to be used on the lowest hazardous portions of the landscape and avoid the riskiest, kind of like we use flood plain maps, there would be a way that those funds actually then cannot incentivize building on the dangerous parts of the landscape. But we do not do that now. There is a tracking to those funds and stipulation of how they are used according to hazard maps.

Ms. HILL. Thank you all so much. This is really, really helpful, and we are just so grateful for the work that you do, and we are going to do everything in our power to get you the resources you need. I yield back.

Mr. ROUDA. Thank you. I now recognize myself. Dr. El-Hasan, if I understood, a question regarding your opening testimony, you were talking about particulate matter in the air and the impact it has on the lungs as the gateway to the human body. And if I heard you correctly, I believe you said hotter fires cause greater issues with particulate matter, did I hear that correctly?

Dr. EL-HASAN. It may not even be hotter, but the temperature of the fire does actually manipulate the kind of particulate matter that comes out. There are too many factors to say whether or not the actual higher temperature would necessarily give you a more

dangerous particulate matter. It is just that it is depending on what is being burned plus the temperature itself.

Mr. ROUDA. Okay, and then somewhat related to that is the discussion that as we have these fires and Mr. Moritz, you talked about this in your opening testimony, about how we address the burning of homes is very different than how we address the forest.

Mr. Berkompas, you talked about the envelope of the house. How we do a good job going forward with the walls and the roof but not necessarily with the inside and the volatility or potential exposure to fires from within. Can you elaborate on that a little bit more as to what is taking place inside the home that is making it more susceptible to fires, and maybe what we can do to address it? Anybody else on the panel if they have comments as well.

Mr. BERKOMPAS. You know, and I will let you fact check me on this, and I would defer to a lot of good building science that is coming out of areas like the California Insurance Institute for Building and Home Safety, which is a cooperative of the insurance industry and these folks that are doing very good work to kind of propel the research, the empirical as well as the anecdotal information, behind why homes burn.

It is, to Mr. Moritz's point, that the burning off, and Mr. Smith's point too, is that the homes are often times burning from the inside out. So, there are vulnerabilities still in the building envelope. So, we are talking about the built environment, what we can do from a building standard standpoint, what we can do to address the existing housing stock, which is millions of homes.

Mr. ROUDA. What does that mean, burning from the inside out?

Mr. BERKOMPAS. So, it is typically embers entering into void spaces and vulnerable spaces that are not prepared to resist—

Mr. ROUDA. Down the chimney, through an open door, an open window? Okay.

Mr. BERKOMPAS. Windows, vents.

Mr. ROUDA. Okay. I think I have a better understanding of it now. Okay, and one thing I really want to point out is that Mr. Berkompas and Mr. Smith is that we recognize as first responders on the front lines how challenging the job is, how much exposure there is from a health standpoint.

I am proud of this committees' work on other issues addressing our firefighters, including perfluoroalkyl and polyfluoroalkyl, PFAS chemicals, and the impact it has had, and I want you to know the four members up here stand ready to do whatever it is we need to do to make sure that you have the protection and support from the Federal government that you need.

I know sometimes as we saw with Jon Stewart bringing excellent attention to the fact that the first responders from 911 were not getting adequate attention. While all members of the House and the Senate often talk a big game, sometimes it takes a little bit of a push for some to move forward.

Again, I cannot emphasize enough we are ready to stand with you on any issues that are important. Is there anything else the four of you want to close with as we end and toward the end of our time, and in before I give you that opportunity, let me just check with Congresswoman Hill to make sure she doesn't have any followup questions?

Ms. HILL. I appreciate it. I have taken plenty of time, but I just want to reiterate my thanks for having this, and for you all being here, and for the work that you do. I think this again gives us a lot to think about to work with our partners at the local and state levels and figure out the next steps for me.

Mr. ROUDA. And I do not want to put you on the spot that you have to say something but for some of you that have been sitting there that you thought gosh, I wish somebody would ask me this question so I can provide this answer, please weigh in.

Mr. SMITH. I am good.

[Laughter.]

Mr. ROUDA. I guess you are never going to make it as politicians.

[Laughter.]

Mr. MORITZ. I am in academics so I guess I will talk a little more. A point that was made earlier, and I see it a lot in our work, if funds coming from the Feds were a little more flexible and how they could be used. Often, they come down to the states and they go out through the Fire Safe Councils, and they have very specific uses that they are allowed to put those funds toward.

Similarly, funds that go to FEMA, if you do not have it written up in your multi-jurisdictional county hazard mitigation plan, funds generally cannot be used for that. So, home retrofits is a big one, and so is community education. Those are two needs that actually kind of fall by the wayside because there is not a specific way to fund a lot of those kinds of activities. So more flexible use of Federal funds I think would be good.

Mr. ROUDA. Excellent. Well again, I want to thank you as well. Yes, I am sorry.

Dr. EL-HASAN. I am sorry. I was going to make one comment. I would like to—our kids are the canaries in the coal mine, and as we see increases in asthma and other illness and other problems because they are the most delicate, we have to take it seriously because what happens to them ultimately will happen to everyone and there are long-term implications from that.

So obviously my job is to protect kids, but obviously it is also to protect everyone, but what I see in them and what I am seeing in children in the pediatric population in terms of lung disease and other issues as well, as a cause from pollution and wildfires is going to spread to everyone and just cause a big mess.

Mr. ROUDA. Thank you, doctor. And thanks to all of you for being here today as well as our first panel. As I mentioned in the first panel, members will have five legislative days to submit written questions to you and we ask for your prompt response, and we will add that to the record.

But again, I really appreciate you taking the time to come here today, share your expertise, help us understand this growing issue. And for those of you in the audience, thank you as well for coming and obviously it is an important topic and that is why you are here today. We will continue to fight to make progress on that. And with that, this committee is adjourned.

[Whereupon, at 12:33 p.m., the subcommittee was adjourned.]